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PAPER TRADE JOURNAL

PAPER THE MAGAZINE
Is Combined with Paper Trade Journal

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Resolve for 1926

WASTE MUST STOP!

IN making your resolutions for the coming year, don't forget the bugbear—"waste"! Resolve to stop waste and you help to end one of the biggest evils in the paper industry.

Take the NEW BELOIT FOURDRINIER into partnership with you. It will do more than any other single factor at your command to stop waste, eliminate idle time, speed up production, increase economy and promote efficiency in the manufacturing end of your business.

Now is a good time to use your reserve fund—to modernize your plant and make good on this resolution!

Let us send you Bulletin No. 9. It will give you some new ideas.

The NEW BELOIT FOURDRINIER

Beloit Iron Works — **Beloit, Wis., U. S. A.**

Since 1858 Builders of Paper, Board Mill and Container Plant Machinery

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View, showing a Nash Hytor Vacuum Pump on suction rolls in the plant of the Mead Pulp and Paper Co., Chillicothe, Ohio.

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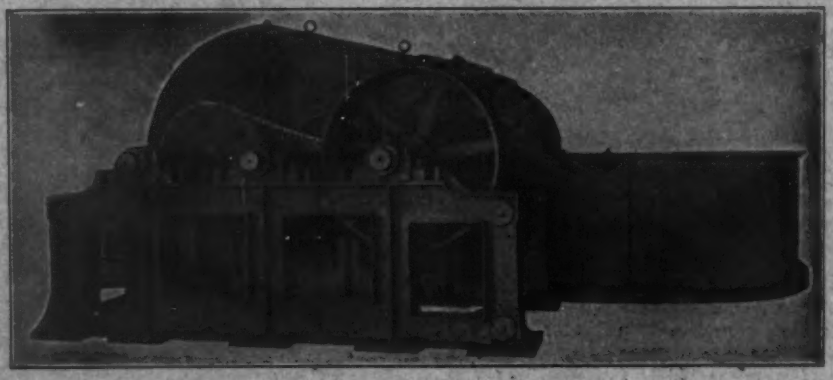

Some Interesting Facts Concerning the Noble & Wood Pulping Engine

The following are a few of the results which have been determined by actual test:

Domestic Kraft pulp laps, 45% dry, fed into 1200 lb. pulper through chute from overhead, treated for beaters and dumped within ten minutes. On thoroughly dry foreign Kraft, total time elapsed was 21 minutes.

On straight wood pulp furnish, 80% groundwood, 20% sulphite, a 1200 lb. engine thoroughly pulped the stock, ready for jordans, in 20 to 30 minutes.

Many other equally good records are available upon request.

Our booklet "CUTTING PRODUCTION COSTS WITH THE PAPER PULPING ENGINE" carries a full history of the development of the pulper. Write for a copy.

THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

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ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. LXXXII. No. 1 — Thursday, January 7, 1926

The Magazine of the Paper Industry

Paper Production Shows Gain in November

An Increase of 8 Per Cent Over October is Registered According to Figures Compiled by the American Paper and Pulp Association and Co-operating Organizations—During The Same Period Wood Pulp Production Showed Gain of 2 Per Cent For All Grades

The November production of paper in the United States as reported by identical mills to the American Paper and Pulp Association and cooperating organizations, showed a decrease of 7 per cent as compared with October's production following an 8 per cent increase in October over September, according to the Association's Monthly Statistical Summary of Pulp and Paper Industry. All grades showed a decrease in production as compared with October, with one exception.

The summary is prepared by the American Paper and Pulp Association as the central organization of the paper industry, in cooperation with the Binders Board Manufacturers Association, Converting Paper Mills Association, Cover Paper Association, News Print Service Bureau, Wrapping Paper Manufacturers Service Bureau and Writing Paper Manufacturers Association.

The figures for November for same mills as reported in October are:

Grade	Number of Mills	Production Net Tons	Shipments Net Tons	Stocks on Hand End of Month Net Tons
News print	65	129,830	132,906	17,413
Book	61	85,508	86,667	45,035
Paperboard	102	122,754	123,729	29,867
Wrapping	77	48,263	51,175	45,283
Bag	24	8,362	8,530	6,795
Fine	78	29,636	28,577	40,207
Tissue	46	12,029	11,989	12,156
Hanging	8	5,181	5,398	1,624
Felts	19	17,168	17,089	2,817
Other Grades	64	19,602	19,611	16,301
Total—All Grades		478,333	485,671	217,498

During the same period, domestic wood pulp production decreased 2 per cent, this decrease being distributed over all grades, with one exception. The November totals (mills identical with those reporting in October) as reported by the American Paper and Pulp Association, are as follows:

Grade	Number of Mills	Production Net Tons	Used Net Tons	Shipments Net Tons	Stocks on Hand End of Month Net Tons
Groundwood Pulp	94	90,213	90,390	3,45.	124,767
Sulphite News Grade	36	38,706	34,683	4,158	8,777
Sulphite Bleached	21	22,735	18,066	4,031	3,367
Sulphite Easy Bl.	6	3,626	3,069	507	1,441
Sulphite Mitscherlich	6	6,540	5,645	1,369	366
Sulphate Pulp	9	13,623	11,896	1,775	1,201
Soda Pulp	11	17,116	11,804	5,141	3,784
Other than Wood Pulp	2	54	73	.....	44
Total—All Grades		192,613	175,626	20,432	143,747

Manitoba Pulp & Paper Co. Lets Contracts

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 4, 1926.—A contract, running well over one million dollars, for the construction of all buildings at Fort Alexander in connection with the pulp and paper development there by the Manitoba Pulp and Paper Company, has been let to a Winnipeg concern—the Carter-Halls Aldinger Company. In making the announcement, M. M. Turner, resident engineer for the company, stated that because paper had to be put on the market by December 1, 1926, it had been impossible to call for tenders in the regular way. The engineer stated that arrangements for the construction of a power line to the mill site had been completed, that the Canadian National Railway spur to the plant was nearing completion, and that delivery of material would start with the New Year. Mr. Turner said that contracts for the machinery had yet to be let. The company, he stated, will be responsible for the building of a complete town, where the workers at the mill will live. It will be laid out by a competent town-planning expert, who is now on the ground, and will have churches, schools, athletic fields, stores and homes.

Pacific Straw Paper Co. to Start January 15

[FROM OUR REGULAR CORRESPONDENT]

LONGVIEW, Wash., December 24, 1925.—The plant of the Pacific Straw Paper and Board Company will be ready for operations January 15, 1926.

The products to be manufactured are pulp and chip boards and papers at a thickness of from 16/1000" up to 50/1000", through an 84" trim machine.

As early as the rotaries can be installed the plant will, in addition to the above, manufacture strawboard and paper. This, it is estimated, will be some time in March.

The capacity of the present unit will be thirty tons per day, and when in complete operation will be one of the most modern board mills in the United States.

Plans for the building of the second unit are already under way and every effort will be made to speedily equip the plant for assuring the best texture, the trade's complete requirements, with a dependable prompt service.

Dudley Paper Co. Reports Record Sales

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., January 4, 1926.—The Dudley Paper Company, Lansing, established a new record for sales in November, according to reports from the general office. No similar period of 30 days has ever shown such returns. Sales for all 1925 have been unusually good, previous periods of spottiness at various points in the company's territory being lacking.

Rosy Outlook for Paper Trade in Philadelphia

Wave of Prosperity During Last Few Months Encourages Members of Industry to Predict Another Successful Year—Many Dealers Anticipate Firming of Prices Due to Effects of the Coal Strike—Numerous Mills Closed for Inventories and Overhauling Machinery

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 4, 1926.—As the new year dawns, the paper trade in the Philadelphia territory is bright and rosy. While there were many disappointments in the early year, the closing days of 1925, with a turn in the tide of the paper distribution business to the wave of prosperity which struck the industrial world in the last few months, gave encouragement to the dealers in their hopefulness for the new cycle of 1926. It is believed that when inventory is completed, the dealers will find that the year's business averaged in excess of 1924, and on the whole was a fairly well maintained trading period for all grades of coarse papers. The fine paper firms, of course, did not enjoy as active a market as in normal times throughout the earlier months, due to the extreme dullness which prevailed in the printing industries until Fall, when the allied trade began to show signs of improvement and in turn brought about an active market for printing, coated and book papers. As the months of the year went along the prices of all grades of paper became more stabilized, following a confused trend, and inroads into quotations in the keenness of competition in the limited markets of the first half of the year. All these adverse factors that have been gradually adjusted with the healthier business conditions, have now disappeared, and there is no cloud upon the horizon to mar the brighter dawn of the new cycle in so far as the paper business is concerned.

Firming of Prices Anticipated

A topic of trade interest within recent days is the question of what may be expected from the present coal shortage and its effect upon the mill quotations of the early year. Many of the dealers are confident that there will be a temporary stiffening of values due to the prospects of a continuance of the coal strike and the failure of government and other interests to bring about a settlement of the dispute between the operators and miners in the anthracite regions. Now that the holiday demands have well cleaned out all stocks on hand there is likely to be a shortage in production in those mills where the coal supply has been depleted, or where the difficulties of the cold weather are drawbacks in the transportation of new fuel supplies. Already many mills have notified the dealers that they are sold ahead from four to ten weeks in the new year. If the coal strike is prolonged these mills will be unable to make deliveries before spring and so there is likely to be a temporary stringency in these grades of paper, and higher prices. Sulphite papers and those of jute content have been among the grades that have already shown signs of stiffening. There has been a slight advance within recent days on all tissues, indicating a firming of the sulphites. The recent announcement made in London predicting that India hemp will be sold at over £60 per ton within a short period is also an evidence of what may be looked for in the cost of jute twines, particularly for those grades used for baling by the paper trade and known as paper makers' rope, already advanced more than 100 per cent within the past eighteen months.

Paper Stock in Lagging Market

If present dullness in the paper stock market continues there is every possibility that prices are due for a revision downward. Mills have been holding off their purchases for the past two months, and so far have shown little inclination to place orders for their 1926 supplies. While there is a possibility of downward revision it will be only in those grades heavily stocked in warehouses and among the lower priced raw materials, such as those which enter into the manufacture of boards. Rag dealers claim that the past season has been the dullest that has been witnessed in the rag market since the post war days. Some dealers have temporarily discontinued the stocking of rags due to the extremely poor demand, and will bar these products until the present situation improves.

Mills Closed For Inventory

The mills adjacent to the Philadelphia territory and those within the city have this week been closed for the purpose of taking account of stocks on hand and other details of making repairs incident to the inventory season. There will be a general overhauling of machinery and other units in preparation for the opening of the new business cycle. Most of the mills were kept at capacity operation up to the closing days of the year with holiday demands or in production of advance orders for 1926. While a few of the board mills have enough business to warrant present schedule of operation for several weeks to come there is not the same demand for printing papers and those mills engaged in the manufacture of the finer grades will no doubt reopen on curtailed output. Manufacturers of book and coated papers have enough 1926 orders on hand to keep mills at capacity for several weeks to come and many of them are advising their distributors to place their orders now so that they will not be found short of goods when present stocks are depleted. The larger mills are sold anywhere from six to ten weeks ahead on coated and book papers. The Delaware mills and those in Maryland, with executive offices in this city, announce considerable advance orders, warranting operation at present speed for the first two months of the year. Most of the demand in these grades covers contracts and large volume orders, rather than broadly scattered and small quantity purchases for stocking with the distributors, and are to be consigned directly to the consumers among the larger publishing and printing houses from the mills.

Plan Graphic Arts Banquet

Now that the rush of the holidays is over the trade is turning its attention to the activities of 1926, both as regards the business plans and those of a social nature. The first big social gathering in the program for the new year is to be the Annual Graphic Arts Banquet to be held on Thursday evening, January 18. Although the date was set at the meeting of the Typothetae and Paper Trade Association committees, held on Tuesday at the Bourse Restaurant this week, there was no definite decision as to the place, the selection of which will be left to the subcommittees to be appointed by the Typothetae for the perfection of arrangements and the program. There was tentatively outlined, when the joint committees met this week, plans for the most auspicious program ever carried out for this annual comingling of the paper men with the allied associates in the Graphic Arts industries. Ever since the paper men and their allies decided upon holding this annual get-together and instituted the social contact with their fellows in the consuming trades at the dinner tables there has been each year a growing attendance and this year it is anticipated that the largest attendance will be attained. Those who represented the Philadelphia Paper Trade Association at the meeting this week were George W. Ward, D. L. Ward Company; David Lindsay, Jr., Lindsay Brothers; A. Richard Hartung, A. Hartung, and Norbert A. Considine, Paper House of

Pennsylvania. Representing the Typothetae were President Charles L. Kinsley and William T. Innes.

Waste Merchants To Hold Annual Banquet

Another social event that will bring together at the banquet table trade associates in various branches of the waste industry and the raw materials is that of the Philadelphia Wholesale Waste Merchants' Association. For the purpose of making arrangements for this year's dinner Secretary William J. McGarity, of the Association, head of the Penn Paper and Stock Company, has called a meeting for Thursday evening, January 7, at the Lorraine Hotel, Broad and Fairmont avenue, when around the dining table will be selected a committee to arrange the program for the annual banquet. It is expected that the annual dinner will be held just before the National Convention in New York so that visitors to that gathering will be able to attend the Philadelphia social event as guests of the association.

Box Makers in Annual Convention

The Western Division of the National Paper Box Manufacturers Association will meet in annual convention on January 27, 28 and 29, at the Hotel Sherman, Chicago. The local headquarters of the National Paper Box Manufacturers' Association, 112 North Broad street, under Secretary Frank S. Records, has perfected plans for the program to be carried out during the three days' sessions. This program will include a specialized schedule of helpful factors in the marketing and sales of paper boxes and the waste problems pertaining to that industry. A. G. Burry, of the Fort Wayne Paper Box Company, Fort Wayne, Ind., will be the principal speaker, his topic being that of the "Problem of Waste as It Applies to the Paper Box Industry." Others who are to join in the discussion and to occupy the platform are President Frank Stone, of the National Paper Box Manufacturers' Association, head of the Jesse Jones Company, Philadelphia; George F. Barber, marketing specialist for the National Association, who will talk on "Marketing Through Boxes," and others to be announced later. There will be business sessions held in the Hotel Sherman with the members of the Western Division participating, and these will be interspersed by the many social functions which have been arranged by the committee appointed by the division for this purpose. The Western Division includes the box manufacturers of the Middle and Western Sections of the country enrolled in the National Association.

Phil Fibre Box Board Mills Improved

With the completion of the recent installations in mechanical units and the building program, the Phil Fibre Box Board Mills, Inc., Delaware avenue and Tasker street, have modernized the manufacturing plant. The boilers have been equipped with Huber Stokers and there has just been perfected one of the most modern of screen rooms devoted to the refining of the paper boards in which the mills specialize, and including such products as are used by the folding and set up box manufacturing industries. The screen room has been built on a commodious scale and has been equipped with the latest of screening devices. With the added improvements, the mills now are able to produce 65 tons of paper board per day, as against the former capacity of 45 tons.

Stokes & Smith Co. Machines For Government

A new high speed rotary press to be used for the manufacture of envelopes manufactured by the Stokes & Smith company, Summerdale Station, Philadelphia, has just been installed in the government printing plant in Washington, D. C. The press turns out 8,000 envelopes per hour and is one of the latest types of high speed production. The Stokes & Smith Company has been enjoying a good season for its box wrapping and box making equipment, having enough orders on hand to keep at capacity production throughout the season. The company is planning to exhibit its paper converting equipment at the National Convention of the Paper Box Manufacturers' Association to be held in this city in May.

Wilder Bros. Complete Sprinkler System

With the closing days of the year, Wilder Brothers, Twelfth and Brown streets, completed the installation of the new sprinkler system throughout its building. The entire six floors have been equipped with this latest type of fire prevention devices. The H. G. Vogel Company, of New York and Philadelphia, were the contractors for the work, using its own special improved system, which is particularly adapted for paper warehousing purposes. The system was installed at a cost of $10,000.

Samuel Ingber on Mill Visit

Samuel E. Ingber, head of the Samuel E. Ingber Company, with offices in the Lafayette Building, wholesale dealers in paper stocks and importers of rags and raw materials is now making a tour of the New England mills. The Ingber Company is planning the expansion of the paper stock business in the new year. The firms during the past year engaged in the importation of stock and also dealt in domestic raw products. Arthur Faerman is in charge of the importing and exporting department.

Bayless Mfg. Co. To Cover Trade Regularly

When Representative Scott, of the Bayless Manufacturing Company, made the rounds of the Philadelphia trade last week he announced that the firm is instituting this year a regular schedule of visits to the local dealers. Beginning this month, a representative of the company will call every two weeks on the dealers for the purpose of providing a regular and better service to its patrons in the territory. In the past, while the company gave much attention to the local trade, it was not on regularly planned schedule.

More News Print Mills a Condition of Sale

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 4, 1926.—The Quebec government has now given out particulars of the five limits which will be offered for lease by auction on February 13. The limits are described as follows: Along the upper Ottawa and Gatineau rivers, 1,800 square miles, with a proviso that the successful bidder must build within three years a news print mill situated on the Quebec side, with a capacity of 450 tons daily; on the Aux Rats and Mitassini rivers, in the Lake St. John district, 1,000 square miles of timber, with a proviso that a mill with a capacity of over 100 tons per day must be built within ten miles from the Mitassini river, and also under the condition that a group of water falls be explioted within a few years. Blocks of timber limits located on the Manouane, the Peribonka and the Alex area, and on the Shipsaw, are also to be leased on the same day, as well as two other groups respectively, located on the Gatineau and on the Chamouchouane, a total in all of about 5,000 square miles. The adjudication price is set at $500 to $600 per square mile, or a total of nearly $2,500,000. The auction will bear on an amount to be paid over the regular stumpage dues. All the timber coming from these limits must be utilizd in this province, and the cut must not exceed 80 per cent of the possibility of the forests. This offer of timber limits is the most important one in years.

Paper Deal Completed Earlier Than Expected

MONTREAL, Que., January 4, 1926.—The St. Maurice Paper Company has issued a notice to shareholders, advising them of the completion of the sale of the company's assets to the St. Maurice Valley Corporation. This, the letter states, was carried out more expeditiously than was expected, and the proceeds are now available for distribution instead of on March 1, as originally contemplated. Shareholders are asked to lodge their certificates with the Montreal Trust Company and receive on or after January 2 their distributive share represented by such certificates at the par value, plus an amount representing interest at the rate of 6 per cent from December 1 to March 1, together with one share of News Print Investment corporation for every five shares so surrendered.

Better Prospects for Ontario Paper Industry

Normal State of Affairs Generally Desired by Wholesale Trade, with Reasonable Profit and Regular Turnover—Pulp Market Continues Active with All Mills Well Sold Up—Salesmen Look for Better Results Than in Corresponding Period Last Year

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ontario, January 4, 1926.—January is opening with much better prospects in the paper trade than for some years past. There is a feeling of confidence that business is going to be larger and steadier and that the waves of uncertainty and depression which have occasionally rolled over the trade, have practically spent themselves. Most wholesalers desire a normal state of affairs with a reasonable profit and a regular turnover and all are doing everything in their power to bring this about.

For some time it has been rumored that the cheaper grades of writing paper are to be advanced in price in the near future and this has caused considerable purchasing along this line. The coated paper industry is not very brisk at the present time owing to the strenuous competition from super-calendared stock. Manufacturers of lightweight tissues, while reporting that the demand is good, are meeting with strong competition from outside souces, shipments in some instances being delivered to customers at a cheaper rate than the paper can be turned out by local plants.

The pulp market continues active and all the mills are well sold up, some of them having their output contracted for months to come. Groundwood pulp is selling at $32, unbleached at $65 and bleached at $80 to $82. One of the most encouraging features of the whole pulp and paper situation is the increasing call for pulp of various kinds.

The holidays now being over and inventories completed salesmen are starting out on their regular routes again and are convinced that they will meet with better results than on some of the journeys which they took early in 1925.

Conserving the Supply of Pulpwood

Major J. I. Hartt, Inspector of Crown Timber Agencies for Ontario, speaking recently in connection with the manufacture of forest products into the finished article, stated that arrangements had been made with the railways and the Customs Department at Ottawa, whereby no wood may leave the county unless there is attached to the bill of lading a clearance from the Crown Timber Agent of the district whence the cargo was shipped. The clearances are issued by the agent when the shipper makes an affidavit. The purpose of the act is to promote the manufacture of wood products in Canada. Major Hartt stated that the outlook is a little brighter in the lumber and pulpwood business. With the favorable weather, the operators have been getting out a somewhat bigger cut than was anticipated. Because of an oversupply of pulp and lack of demand for lumber, the cut will fall about 50 per cent below the normal.

Ontario Had Very Few Fires

Statistics just issued by the Hon. James Lyons, Minister of Lands and Forests for Ontario, indicate the forest fire, the spectre of the Northern Ontario timebr limits, has been mastered. Mr. Lyons stated that the fire loss for the past year totalled 10,154 acres of timber. The year previous the loss was 14,600 acres and the average for five preceding years was more than a million acres a year. The Minister said that the splendid showing for the past year was due largely to the patrol of forest planes and quick detection of fire outbreaks.

Paper Box Men's Next Convention

Some time ago the Canadian Paper Box Manufacturers' Association, of which S. J. Frame, Toronto, is the secretary, sent out a questionnaire in regard to the most desirable place for holding the 1926 convention. Of the members who cast their ballots, nearly two to one were in favor of Montreal. Some, in their answers, intimated that if the convention was held on a trip down the St. Lawrence River to the Saguenay, it would not be possible for them to attend owing to the amount of time which such a journey would involve. The Executive therefore, has decided that the next convention instead of taking place on a steamer down the Saguenay River, will assemble in Montreal.

Unique Greeting Card of Mr. Schofield

E. A. Schofield, of the Schofield Paper Company, St. John, N. B., who is president of the Canadian Paper Trade Association, sent out a most unique greeting to all the members at the Recent Yuletide season. On a large card he expressed best wishes for a most merry Christmas. There was also printed at the top some appropriate verses dealing with the splendid fishing facilities of the Maritime provinces. Attached to each card was a large finnan haddie demonstrating the piscatorial wealth of New Brunswick and Nova Scotia waters. These unique remembrances, consisting of both paper and fish, certainly aroused much interest.

Paper Box Men Look Well Ahead

At a recent meeting of the Toronto Carton Council at which President Constantine, of Montreal, presided, considerable business was transacted. S. J. Frame, secretary-treasury of the organization, in presenting a report to the executives, stated that the industry having survived—and relatively in comparison with other industries—very successfully, five years of strenuous times, the manufacturers of paper boxes were now on the eve of a better era. The directors instructed Mr. Frame to invite concrete suggestions regarding the steps to be taken by the Association in the interests of the Canadian paper box and carton industry and toward promoting its prestige. Several valuable and timely suggestions were made which will be put into practice.

New Incorporations

Building Products, Ltd., with a capital stock of $1,848,000, and headquarters in Ottawa, is a new organization empowered to manufacture, sell and deal in all kinds of paper, paper products, felt, asphalt, canvas, boxes, roofings, floor and wall coverings, etc.

Better Packages of Canada Ltd., with a capital stock of $5,000, and head office in Toronto, has been federally incorporated. The company is empowered to buy, sell and otherwise deal in goods, wares and merchandise.

A federal charter has been granted to Provincial Paper Sales Ltd., with a capital stock of $1,000,000, and headquarters in Toronto. The company is empowered to buy, sell and deal in all kinds of pulp, paper, cardboard, paper materials, etc.

Notes and Jottings of the Industry

Mr. Stephenson, late of the Rudd Paper Box Company, Toronto has just joined the sales staff of the Dominion Paper Box Company, Toronto.

Leslie Thatcher, Toronto, who is well known in paper box manufacturing circles, has been appointed manager of the Novelty Paper Box Company, 1303 Queen street, West, Toronto.

H. B. Donovan, sales manager of the Canada Paper Company, Toronto, who has been confined to the house with illness, is making good progress towards recovery.

MATHIESON Chemicals

Quality Is Paramount

WITH many of the raw materials going into the chemical-consuming industries, market fluctuations are wide and frequent. In such cases the question of price may readily assume in the mind of the buyer an importance out of all proportion to other vital considerations.

This undue emphasis on price may often extend even to those raw materials where market changes are infrequent and small, and where little may be gained by "shopping" for lower quotations. Thus, when the quality and uniformity of the product and the character of the manufacturer should be the prime considerations, price frequently becomes the principal deciding factor. Long-established brand names and records of service may be entirely disregarded for a negligible difference in price.

By rigidly adhering over many years to a uniformly high standard of manufacture, we have built up for our "Eagle Thistle" Brand products an enviable record for quality and uniformity, at the same time establishing a reputation for satisfactory service and equitable business dealings with the consumer. We believe that discriminating buyers are recognizing more than ever before that these are the first things to be considered in selecting a source of supply.

The MATHIESON ALKALI WORKS, *Inc.*

250 PARK AVE., NEW YORK CITY

PHILADELPHIA CHICAGO PROVIDENCE CHARLOTTE

EAGLE THISTLE PRODUCTS

Deal Direct with the Manufacturer

Bicarbonate of Soda
Liquid Chlorine-Caustic Soda
Sesquicarbonate of Soda
Bleaching Powder-Soda Ash

Successful News Print Experiments at Madison

Research Workers of U. S. Forest Products Laboratory Prove That Satisfactory News Print Can Be Made From Eucalyptus Wood Grown in Brazil—Possibility of Perpetual Supply to Fill Shortage Caused by Depletion of North American Spruce Forests

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 31, 1925.—A new source of cheap news print paper has been discovered, as the result of experiments conducted by the United States Forest Products Laboratory, of Madison, which proved that satisfactory news print can be made from the eucalyptus wood grown in Brazil.

The success of the experiment is believed to have world wide significance. Research workers at the Forest Products Laboratory declare that a perpetual supply of news print paper to fill the shortage resulting from the depletion of the North American spruce forests is possible.

Dr. Edmundo Navarro de Andrade, chief forester of the state of Sao Paulo, in Brazil, had some of the eucalyptus wood sent to the Forest Products Laboratory at Madison and watched the experiments. He expressed the opinion that the new product will bring into prominence the manufacture of news print paper in Brazil. It makes possible the production of paper at about one-half of the cost of the present news print paper laboratory estimated.

A small roll of the paper made from eucalyptus was run through the rotary press of the *Wisconsin State Journal*, a Madison newspaper, and the results showed "very favorable printing qualities and ample strength to run in high speed presses," the experimenters said. It is said that the same species of the wood can be grown in California, New Mexico, Arizona and Florida, and that the tree could attain to pulpwood size in about ten years, or even less.

The experiments were conducted under the direction of Roland N. Miller, formerly of Appleton, who with his assistants worked night and day for about two weeks. The cooking of the eucalyptus had to be watched constantly so that various temperatures and different stages of the process could be recorded at all times.

Mr. Miller is a graduate of Appleton High School and of Lawrence College, in this city. He was at first assistant superintendent of a paper mill at Port Edwards, Wis., and later was connected with the Interlake Pulp and Paper Company, of Appleton. Leaving this city in 1920, Mr. Miller took a position with a paper mill in Ha Ha Bay, Quebec, Canada, where he remained until he went to Madison about four years ago to do research work in the Forest Products Laboratory. He is now considered one of the leading pulp and paper research workers of the country and has lectured extensively throughout the United States and Canada.

Safety Work at Kimberly-Clark Mills

Rivalry has been the great spur to safety achievements in the mills of the Kimberly-Clark Company. The saving or fingers, toes, hands, feet, arms and legs there has progressed from the selfish desire of the individual to the earnest concern of everyone for the entire family of workers. This is what has helped the mills at Kimberly and Niagara to establish world's safety records and the other plants at Neenah, Appleton, Niagara Falls, Kapuskasing, etc., to make every department a safer one in which to work.

The mills realized that industrial safety could never reach a very high degree by the mere posting of "Safety First" signs and Bulletins of accident statistics for perusing by the employes. The sportsman's instinct in the workers was appealed to and keen rivalry was developed between the various mills of the parent company. The step from inter-mill safety contests was inter-department contests. This year the mill at Kimberly went a step further and divided the workers into factions designated by colors.

During the course of the competition, the Yellows staged a circus, a barn dance and other entertainments, while the Greens arranged noon hour dances, boxing contests, vaudeville programs and the like, at which the safety idea was constantly kept before the eyes of all. Safety talks and debates were given. At such events "white collar" men and women from the offices and the blue denim workers in the mills joined hand in hand in the endeavor.

The company donated a silver shield in the interdepartmental contest and offered a $1,000 prize in the inter-mill contest. The mills at Kimberly and Niagara Falls came down the home stretch tied for first place for the $1,000 award, with the mills at Niagara and Kapuskasing crowding close behind.

Something of the concrete results obtained by this contest is seen from statistics at the Kimberly mill. Starting with the year 1914, the number of accidents for successive years was: 104, 104, 143, 160, 115, 76, 71, 54, 43, 34, 7.

Aerial bombs are exploded at the Kimberly mill each year at 4:30 in the afternoon when no accidents have occurred in the last twenty-four hours. The exploding of these bombs has been of very frequent occurrence last year.

Father of the Safety Movement

The father of the safety movement in the Kimberly-Clark Company mills is S. F. Shattuck, treasurer of the company. Credit for general safety work in all of the mills goes to M. G. Hoyman, general safety director. At Kimberly, which established a new record for safety this year, E. W. Young, superintendent of the material supply warehouses, directs the safety work as chairman of the safety council.

The record established by the Kimberly mill was 135,188 man-days of safety. This means that this plant, with more than 900 employees, operated a total of 150 days without an accident whereby the worker lost a minute of time. This man-day record, it is asserted, broke all paper mill safety records.

Old Employes to Be Entertained

The various industries in Appleton are preparing to hold a banquet for all employees who have served their companies for 25 years or more. They will be guests of the manufacturers at a dinner being arranged by the industrial and transportation committee of the Appleton Chamber of Commerce. It will be featured by an address by Douglas Malloch, one of America's greatest poets and humorists.

Among the local concerns, the following paper mills and allied industrial plants have been in existence for more than 25 years: Appleton Machine Company, Appleton Wollen Mills, Appleton Wire Works, Fox River Paper Company, Interlake Pulp and Paper Company, Kimberly Clark Company, Fox River Wire Cloth Company, Patten Paper Company Marshall Paper Company, Wisconsin Wire Works, Thilmany Pulp and Paper Company, Riverside Fibre and Paper Company, and Valley Iron Works.

To Rebuild Wisconsin River Dam

Permission has been granted by the Wisconsin Railroad Commission of Madison to the Wisconsin River Paper and Pulp Company to raise, enlarge and rebuild its dam on the Wisconsin River in the town of Plover, near Stevens Point, Portage County. A hearing on the matter was conducted in November by the railroad commission. The dam will be of concrete to replace a wooden one, and will provide better power for the company.

The third fire to occur within two weeks at the Paper Roll Plug Company plant at Menasha took place there this week when the roof of the dry kilns was badly damaged.

Ten thousand horsepower of electrical energy was surging over the newly completed power line of the Wisconsin Gas and Electric

(*Continued on page 44*)

Standard of the World

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Canada

England

Japan

Norway

Finland

Australia

Cuba

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866

The BIRD SCREEN

17,000 tons of paper pass through Bird Screens daily

The Growth of Paper Making*

By D. C. Everest[1]

"The origin of paper making seems to be rather in doubt, but it is a very well established fact that it was a development of the use of papyrus, although actual paper manufacture from a wet pulpy mass began nearly 2000 years after the Egyptians had discovered the practical use of the thin layers of tissue in one of the water plants growing along the Nile. This plant was used for many practical purposes; the center of the stem was used as food; the coarser fibres woven into mats, sail cloth, wearing apparel and twisted into ropes. Boats were made by weaving the small stems together and covering the whole structure with resin. In the stems were found layers of tissue-like fibre and these were carefully peeled out and laid on flat surfaces and then piled up in four or five layers reversing the grain on each alternate sheet. Then the whole mass was compressed and the natural gummy substance in the plant held the sheets together and these were allowed to dry in the sun and then polished, or as we would say today, calendered by rubbing with a piece of smooth stone, shell or ivory, thus making a smooth writing surface. These were fastened together endwise with paste, usually about twenty sheets and fastened to a wooden spool at each end and then wound from one spool to the other as the work of reading or writing progressed. These sheets were about fifteen feet in length by from four to twelve inches in width. This material continued in use for many centuries before paper was formed from pulp, with the aid of crude devices said to have been developed by the Chinese in 123 B. C. But it was not until 751 A. D. that the use of paper became known outside of China. The story is told that in that year the Chinese attempted to drive the Arabs out of Samarkand and were repulsed and in the flight which ensued the Arabs captured many Chinese prisoners, among whom were some skilled in the manufacture of hand made paper. These captives imparted the secret of paper making to the Arabians and in Arabia began the manufacture of paper on considerable scale.

Arabian Paper

"There are today preserved in the University Library of Leiden pieces of Arabian manuscript written on paper dating back to 866.

"There has been much discussion as to the first material used by the Arabs, but it is now generally conceded that it was made from the cotton plant, reduced to a pulp according to the Chinese method. Later linen, flax and other vegetable fibres were used. By the 10th Century paper had entirely displaced papyrus and rags were being used in large quantities in Asia. Paper making in Europe was first established by the Moors in Spain in the middle of the 12th Century. There was not much change in the method of making paper from the time of its introduction into Europe until 1545 when watermarks were introduced and new features brought out. The manufacture of hand made paper continued until 1798 when Louis Robert of the Essonne Paper Mills of France invented a machine for the making of paper which was introduced into England by Henry Fourdrinier and embodied substantially the basic scheme of our machines of today, which are named for the maker and not the inventor, being called Fourdrinier machines.

First American Mill

"The first paper mill in America was established by William Rittenhouse at Germantown, Pa., in 1690. This mill made hand made paper and as the demand increased in this country many small mills came into existence. It is a peculiar thing, that while Egypt once made all the writing materials for the world, today it does not manufacture a pound of paper of any kind and China and Arabia have long since ceased to be factors in paper making. America and Europe practically supply the world's requirement for paper and paper products. Today American production is far in excess of our foreign competitors.

An English Improvement

"Shortly after the Fourdrinier machine was developed, John Dickonson, an English paper maker, invented another method of making paper which competed with the Fourdrinier machine. The Fourdrinier patent covered the manufacture by means of making the web on an endless piece of wire cloth, whereas on the cylinder machine, Dickonson used a polished hollow brass cylinder perforated with holes covered with wire cloth, which revolved over and just in contact with the prepared pulp, sucking out the water and leaving the fibres deposited on the wire cloth. Woolen felt was brought in contact with this cylinder and the paper pulp adhered to the underside of the woolen felt and passed on to the next cylinder mould, and in this manner layers were deposited one on the other, building up a sheet of several plies and thus enabled the manufacturer to make heavier weight paper than had formerly been done on the Fourdrinier machine. Except for some minor improvements there was but little progress made in the art of paper making during the 19th Century. Of course, there were many refinements of the original process and by 1850 practically all of the hand made paper made in this country was used for the very highest grade of printing, for correspondence stationery, etc., but the bulk of the paper in general use was made on paper machines.

Use of Wood

"The first suggestion of the use of wood for paper making occurred in 1719, when Reamur in an essay published at that time observed that the fabric of wasp nests was procured from wood, and that in his opinion this material should be used for paper manufacture, but it was not until 1840, nearly 120 years after it was first suggested before any mechanical wood pulp was used and not until 1854 was the first chemical pulp produced. This pulp was made by Watt and Burgess in England by the use of the soda process. In 1860 Routledge, an English paper maker, introduced the use of the esparto-grass for printing and writing papers, and it was not until 1870 that the use of Sulphite pulp was made a commercial success by Fry and Ekman in Sweden. The process patent, however, was granted to Tighlman of Manayunk, Pa., who finally developed this process in conjunction with the Swedes, and the first sulphite pulp was manufactured in the United States in 1882 by Charles F. Wheelwright at Providence, R. I., and it was only shortly after that time that a little mill was developed in northern Wisconsin for the manufacture of sulphite pulp, which was later abandoned.

Sulphite Pulp

"The manufacture of sulphate pulp was not introduced until along the early part of the present century.

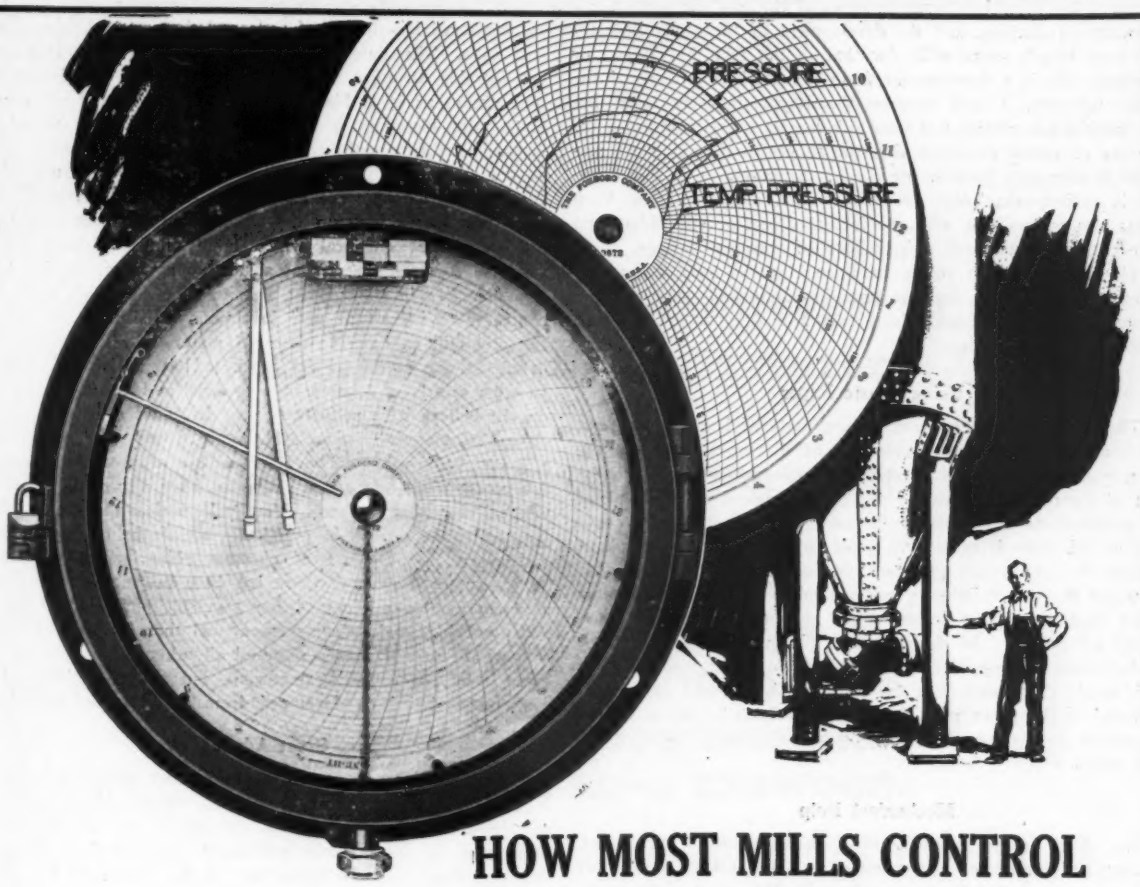
"Our present sources of raw material for the manufacture of paper consists of rags varying from the highest grade of linen cutting down to the lowest grade of cotton rags and all of these are utilized in some grade of paper to advantage. The importance of rags in paper making has constantly decreased, and today rags are utilized only in the very highest grades of writing, bond papers and ledger papers.

Rag Paper

"One thing which has affected the rag paper industry very

* Address delivered before the Rotary Club of Warsaw, Wis.

[1]Secretary and General Manager of the Marathon Paper Mills Company of Rothschild, Wis., and Vice President of the American Paper and Pulp Association.



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THE COMPASS OF INDUSTRY

seriously has been the change in styles of clothing and particularly of women's clothing, and the development of the paper industry has been largely responsible for that in the fact that Rayon or synthetic silk is a development from the sulphite process of the paper industry. I will mention the Rayon industry later, but the substitution of silk and near silk has so completely killed off the use of cotton garments that the supply of that class of material is extremely limited. One large manufacturer in this country is entirely dependent for white linen clippings from linen shirts and collars, but with the increased use of silk shirts and soft cotton shirts, and soft collars of various designs, these people have had their supply of linen clippings very badly curtailed, with the result that the price has increased materially and a number of manufacturers have been forced to substitute other materials for linen clips.

Using Waste Paper

"The second important paper making material is the old papers, which are re-used. The development of the process for the extraction of ink from old papers was perfected during the latter part of the nineteenth century and the utilization of waste paper has grown to be a tremendous industry. Today practically every kind of old paper is utilized in some form or other in the manufacture of some grade of paper or board. For the utilization of waste the paper industry has probably developed to greater extent that any other industry and depending upon the possibility of profit to be derived from picking up old papers all of that class of material is used. Of course, when the gathering of it would cost more than the value of the product after it is delivered to the paper mill, that portion cannot be saved, but as a general proposition this only applies to rural districts and very small towns.

Mechanical Pulp

"The third factor in the general development of the paper industry and sources of raw material was the utilization of what we term mechanical pulp or groundwood. This product is simply what the name indicates, 'ground wood,' and today we utilize spruce, balsam and poplar in the production of this class of material. The wood is usually cut into twenty-four-inch lengths and is ground against a grindstone having a face of twenty-seven inches and a diameter of fifty-four inches. The wood is pressed against the stone at varying pressures, depending upon the fineness of the pulp desired, and no chemical treatment is used. This is the class of pulp which makes up from eighty per cent to eighty-five per cent of the furnish of the ordinary newsprint paper which you see today and is also utilized largely in some grades of boxboard and cheaper grades of cardboard.

Chemical Pulp

"The most important group of materials now used in paper manufacturing are the chemical pulps, consisting of what is commonly known as soda, sulphite and sulphate pulp. Soda pulp was the first process used and the resultant pulp from this process is a soft pulp, easily bleached and is used principally in the manufacture of book papers and papers for printing. The sulphite process is the principal one used for the manufacture of chemical pulp. The chemical used for the reduction of the lignin in the wood is sulphurous acid or bisulphite of lime liquor, which is derived from the burning of sulphur and the passing of the gas arising from this operation through lime water, forming a combination known as Bisulphite of Lime liquor. This is a strictly acid process and the pulp gets its name from the word 'Sulphite' which is a portion of the name of the resultant chemical fluid used. The third important factor in the chemical pulp group is the sulphate pulp, or what is commonly known as Kraft pulp This process is of comparatively recent use and varies from the sulphite process largely on account of the use of an alkali for the reduction of the lignin in the wood. The chemical employed is sulphate of soda and the common name for it is salt cake. The pulp resulting from the sulphate treatment is considerably stronger than sulphite, but it has a brownish color and except as it is bleached, cannot be used for all purposes. Even with bleaching it is not possible to make it as white as bleached sulphite pulp. Consequently, it is employed only in papers where strength is required. In the manufacture of both sulphite and sulphate the matter of recovery of chemicals is the most important factor in the whole manufacturing process, and the amount of chemical which finally finds its way into the sewer is so small that it has absolutely no effect on fish life or vegetable life in the stream, despite what has been said to the contrary. With recent new inventions it is not now necessary for any mill to have a waste of materials which should show in excess one pound of dry stock to 1000 gallons of sewerage. In other words—a relation of 1 to 8,500 and beyond that point I do not believe it is possible to go. In addition to these various classes of materials, straw is being used and has been used for a great many years. The principal use at present, however, is for corrugating, and straw seems to have a peculiar snappiness adapted for that purpose. You will notice that straw forms the corrugated section in practically all of the corrugated boxes and except for the use of chestnut chips, which process has been recently developed, there has been no substitute for straw as a corrugating product. Other vegetable fibres have been used and are being used to some extent and there is frequent discussion of the use of corn stalks and all other seasonable vegetable growths as paper making materials, but as yet nothing of any consequence has been developed from that class of material.

Great Advances

"During the past ten years there has been greater development in the manufacture of these various classes of pulp and the utilization of different materials and also in the manufacture of paper than in the previous 100 years. One of the reasons for this, I believe, was the formation of the Technical Association as a part of the American Paper and Pulp Association. People had been working on all of these chemical problems individually and in a secret manner and had never given out any information to anyone else. After the Technical Association was organized, gradually these meetings brought these men together and they commenced to discuss their problems and found that other people were working on the same problems on which they were working and by comparing notes and discussing these things they were able to get advantage of the experience of each other with the result that there was almost a complete breaking down of this so-called secret idea of things and committees worked together in the Technical Association on great problems for the benefit of the whole industry. Men connected with the industry soon saw the advantage of technical education in conjunction with the chemical problems particularly and commenced to employ chemists and other technical men in their plants, with the result that we have made greater strides in the economies of manufacture and have developed more new things in the last ten years than during almost any other like period in the history of paper making. I do not believe that this applies alone to the paper industry. I think it would apply to any industry if they were willing to carry it on in the same manner.

Measures Civilization

"It is stated that 'The consumption of paper is the measure of a people's civilization' and if you will just stop and think for a moment of the constantly increasing use of paper in this country, you will see that it would be utterly impossible to carry on a single line of business without paper of some character. There are substitutes for almost every other material, but the removal of the paper industry would affect everything we do. From the day your birth certificate is issued until the time some

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America Leads

"The consumption of paper per capita in Russia is thirteen pounds per year; Japan, sixteen pounds; Norway, thirty-three pounds; Germany, forty-five pounds; Great Britain, seventy-five pounds and the United States 150 pounds. These were figures available for 1923, and there has been a considerable increase in production and consumption of paper in this country since that time. On this basis you will note that we use twice as much as England, three times as much as Germany and twelve times as much as Russia per capita. As we are the largest users of paper individually you will probably be interested in knowing as to the percentages of the various kinds of paper which go to make up our daily per capita consumption. Boxboard makes 31.2 per cent; newsprint 20.9 per cent; book 14.9 per cent; wrapping 14 per cent; felt and building papers 5.7 per cent; fine writings 5 per cent; tissues 2½ per cent; hanging 1.2 per cent; and all other grades 4.6 per cent. Of course, if we were to consider the value of these products the position of the grades would be altered and the finer grades of paper would occupy the higher position. The use of paper in this country and the growth of production to all grades between the years of 1899 and 1923 increased 3.3 times. The greatest increase was in the use of board, which increased 5.7 times, indicating an enormous growth in the use of boxboard for individual packing. You can think back to 1898 and you will recall that practically everything in the grocery store which now comes in packages was sold in bulk. Wooden boxes were used for practically every purpose and today there is scarcely anything in a grocery store which can be purchased in bulk quantities; in fact everything is in its own container and the smaller the quantity purchased in a container, the better the general public seems to like it. Only recently in checking up the products of the Marathon mill, I found that seventy per cent of the production which we are making today goes into articles which were not in general use prior to 1914. I do not believe this is true of any other industry in the world. While it may be argued that all of these new uses are an extravagance, there is plenty of evidence to show that proper wrapping and packing of all classes of goods more than saves the expense through the decrease in the waste, particularly of food products.

Aid Sanitation

"Education of people along sanitary lines has brought about the use of the increased quantity of paper. This lies largely with the manufacture of waxed paper for the wrapping of bread and has so increased that today in any up-to-date bake shop or in any place where they dispense soft drinks or food products you will find nothing except paper cups, paper sippers, paper napkins, or waxed wrapping paper or waxed cartons, paper cans and paper containers of all sorts have come into general use. Perhaps the greatest discovery has been in the manufacture of Rayon or snythetic silk. This is a development from sulphite pulp. The scheme in itself is an old one as it was suggested in 1734 by the same man who suggested making paper out of wood. His idea was to replace natural silk with an artificial product, and although he suggested it in an essay in 1734 it was not actually taken up until 1855 and then the work done on the artificial silk proposition did not amount to a great deal. Later in 1882 a group of men introduced Nitro-Cellulose thread for carbon filament for electric lights but these were not commercially successful. In producing this product the various men who worked on the proposition watched the silk worm very carefully and the whole scheme has been to try to reproduce in a mechanical way the natural process, using an entirely different chemical formation. They finally were able to reduce the sulphite pulp to a viscose material, which while not of the same chemical composition as the product given off by the silk worm acted in about the same manner and eventually they devised schemes of making silk substitute. The behavior of the silk worm in spinning its cocoon is described as follows:

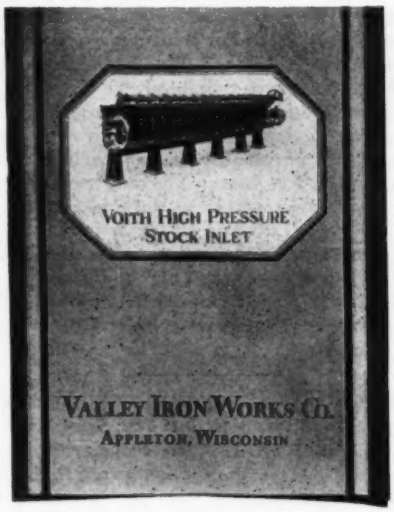
Silk Substitutes

"When ready to spin their cocoon the worms desired to climb. They are then placed on racks constructed of bamboo and rushes with branches of rice straw to hold the cocoon. When the worm is placed on the trellis for its spinning it discharges through minute apertures in its lower jaw two silk filaments in a form of a gummy liquid which hardens on exposure to the air and acts as a support for the cocoon. The worm then doubles itself on its back almost like a horseshoe with its legs on the outside and emitting the filament from its tubes, winds it around and around its body with rapid circles of its head. It is estimated that its head described about one elipse a second and some 300,000 in making a cocoon. This process takes four days.

Use of Rayon

The scheme for making Rayon contemplates almost identically the same thing. The solution is forced through small capillary openings. These fine jets spout into a precipitating bath and the fine filament is wound into groups and all of this is eventually spun out into silk or silk substances.

"In the United States unsuccessful attempts were made until 1913 when a production of 1½ million pounds was reached, based on Viscose process. In England the people laughed when silk was begun to be manufactured in Manchester, claiming that 'They were trying to make silk stockings out of cabbage,' but it is a safe bet to make that today seventy-five per cent of the people in this room are wearing wooden socks and probably have on considerable other clothing which is made from wood. It is stated that one ton of purified sulphite cellulose produces in a manufacturing way 1500 pounds of viscose Rayon, being nothing else than cellulose. The cost of bleached sulphite pulp is between four cents and five cents per pound. And the present market price for a good quality of Rayon is $2.00 per pound. This illustrates the value of research and ingenuity of chemists in applying intricate methods and labor, increasing the value of raw materials from four cents to $2.00. It also shows in dollars and cents the financial power and value of chemistry in industrial application, the chemist's work being a transformation from one kind of cellulose into another. The increase in the production of this product has been amazing. With less than a million pounds in 1913 the production for 1925 is estimated at fifty-two million pounds and the estimated production for next year is set at eighty-four million pounds. With the constantly increasing use for this material, the manufacturers who have been wise enough to see the development of it, have gotten up new fabrics using a portion of Rayon in the production of these, have found that their business in textiles has rapidly increased and that the prevailing demand is for novelty fabrics of all sorts. This has reacted in a way on the cotton industry inasmuch as they have been very slow in taking up the matter of special things. Now they seem to have gotten the idea and in all probability the advent of Rayon and cotton fabrics will change the whole scheme of textile goods throughout the United States. The development in the process of handling sulphite pulp and even rag pulp has been the basis of many of the important products in common use today. Moving picture films for instance was a development of the paper industry. There have been all sorts of leather substitutes and one must be very well informed if you are able to detect some of the substitutes which are now on the market for all classes of material. Someone has said that paper is the most important discovery next to fire, and I believe if you will think this over you will agree with him. Without paper there would



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be no means of recording or transmitting thought. Education would become a word of mouth proposition and education as well as government would become an individual thing. One can scarcely imagine the chaotic condition of the universe if paper were removed from our daily existence. No product contributes so much to the education, comfort and well being of a nation as paper, and on no other product are we so dependent. One of the greatest evidences of the necessity of paper is shown in the use of newsprint paper. Natural thought is that during the war we must have used more newsprint paper than at any other time on account of the special editions and extras which were constantly coming out. As a matter of fact the war years were nothing in comparison with 1920, and 1925 has seen an increase in production and use of newsprint paper in the United States and Canada of twenty-seven per cent over 1924 for the first eleven months of the year. So far this year there has been produced 2,771,926 tons of paper in the United States and Canada, and when you figure that the production in boxboard has been almost thirty per cent more than in newsprint, you can get an idea of the terrific volume of paper and paper products turned out in this country.

Advertising Helps

"Advertising is the reason for the increased consumption of newsprint. It is likewise the cause for increased use of book paper, high grade coated papers, of sulphite bond, and of almost every other grade of paper which is in some form or other printed; advertising necessarily creates business and no business is as stable as a well advertised line.

"People have begun to find this out and manufacturers are extending their lines by national advertising at an ever-increasing rate and what has been the result of all of this? I think this country has seen about as evenly maintained flow of prosperity during the last four years as during any other four year period. Perhaps the profits are not as great as they were during some of the war years, but they are usually better than pre-war years and back of this all seems to me to be the factor of stability due to increased advertising and better distribution. There may be many other factors which contribute to this, such as transportation, money markets and several other important factors, but back of it all is the generous use of paper. In the advertising field, which encourages the rapid transfer of manufactured articles to the consumer and builds a substantial business structure for the benefit of all the people, as industry supported by agriculture, is the backbone of any nation."

EXPERIMENTS AT MADISON

(*Continued from page 36*)

Company this week, from the big Lakeside steam plant in Milwaukee to the hard-pressed Peninsular Power Company at Twin Falls, Mich., which, due to low water, has scarcely been able to meet the demand for current. In the spring when the water is high, the Twin Falls plant will operate to full capacity and will divert its surplus power to Milwaukee territory.

The line connects with the Appleton system running to the substation which was built recently two miles south of the city. The new line will greatly augment the power in use here. The new line and itse accessories represents an investment of $2,500,000. It is th longest in the state and one of the longest in the country outside of California. Between Green Bay and a point near Amberg it traverses the towers of the new power line built for the Northern Paper Mills, Green Bay, which extends from Green Bay to White Rapids.

More Power for Northern Paper Mills

The Northern Paper Mills own a hydro-electric site at White Rapids with an estimated capacity of 14,000 horsepower. At present the company generates most of its power with a steam turbine and buys the rest from the Wisconsin Public Service Corporation of Green Bay. When its own power plant is built and put into use, the steam equipment will be retained for use in times of low water.

The Wisconsin Valley Power Company is the latest public utility corporation to be organized with Wisconsin River Valley capital. It will take over the property and assets of the Antigo Electric Company and the Rhinelander Light and Power Company. recently acquired by the Wisconsin Valley Electric Company. The new company will be owned by the same interests as the Wisconsin Valley Electric Company. The officers are: C. C. Yawkey, president; B. F. Wilson, vice president; C. S. Gilbert, treasurer; Harold L. Geisse, secretary and general manager. The directors are the foregoing officers and J. S. Alexander, A. L. Kreutzer and D. C. Everest. Most of them have big paper mill interests.

The Wisconsin Valley Electric Company recently completed a high tension line from Tomahawk to Hat Rapids on the Wisconsin River, eight miles south of Rhinelander, and from that point the Rhinelander company's 13,000 volt line was rebuilt to carry 44,000 volts from Hat Rapids power plant of that city.

Antigo will also be supplied with electric current to be carried over high tension lines from the power lines of the Wisconsin Valley Electric Company.

S. Spector & Co. Completes New Warehouse

PHILADELPHIA, Pa., January 4, 1926.—S. Spector & Co., whose offices are located at 1707-09-11 North Philip street, Philadelphia, have completed the additions to their former warehouse, which was started about six months ago.

The new structure will give the firm about 30,000 additional square feet and includes all the space from 706-08-10 North Second street and extends for an entire square to North Philip street.

Three electric baling presses are in constant use and with all other modern facilities employed, makes the firm one of the outstanding graders and packers in the Philadelphia district.

As is pretty well known the firm specializes in the grading and handling of old cotton and woolen rags, making a specialty of handling large quantities of rags for shredding purposes.

In addition to the above, they will operate and conduct a new paper department, handling all grades of bond, ledger, and book paper. This department will be in charge of Samuel B. Mahler who is well known in the paper trade.

The business of S. Spector & Co. was started in 1912 and has shown phenomenal growth. It is co-partnership, comprising Mr. Samuel Spector ad Mr. Nathan Goldberg.

William A. Coll who has been associated with the firm for a good many years has assisted the Messrs. Spector and Goldberg materially and much credit is due him for the splendid growth of the company.

United Paperboard Protests Freight Rates

THOMSON, N. Y., December 26.—The United Paperboard Company, which operates a large mill here, has filed a complaint with the Interstate Commerce Commission with regard to freight rates charged by the railroads on coal shipments to Thomson. The company during the past year has filed several complaints with the Interstate Commerce Commission, alleging excessive rates on pulp and other shipments, and has been successful in securing lower rates in several instances.

The latest complaint declares that the Delaware & Hudson Company, Erie, Pennsylvania, and Greenwich and Johnsonville Railroads discriminate against Thomson in fixing rates on birdseye anthracite shipped from mines in Pennsylvania. It is stated the rate now applied is $3.28 a net ton, while rates to other points are: Glens Falls, $2.77; Rutland, Vt., $3.15; Saratoga Springs, $2.65; Rouses Point, $3.98. In charging a higher rate to Thomson than to more distant points the railroads are violating the Interstate Commerce Act, the complaint declares, and the rate of $2.52 a ton is asked of the commission. Large quantities of birdseye anthracite are used by the United Paperboard Company at its Thomson plnt, and the commission is asked to establish a lower rate and to order the railroads to refund overcharges made on previous shipments.

BLEACHED and UNBLEACHED
SULPHITES
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EVERY DESCRIPTION

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Appleton, Wis.—The Combined Locks Paper Company has completed plans and will preceed with the erection of a new addition to its mill at Combined Locks, to be two-story, 100 x 170 feet reported to cost in excess of $75,000. It will be of brick and concrete. A general building contract has been awarded to C. R. Meyer & Son, 50 State street, Oshkosh, Wis.

Monroe, Mich.—The Consolidated Paper Company has practically completed its new strawboard mill and will begin production with the employment of about 100 additional men. The plant represents an investment of close to $500,000, including machinery, and will be developed to maximum capacity at an early date, when a working force of close to 250 operatives will be engaged.

Grand Rapids, Minn.—In connection with its proposed plant expansion, the Itasca Paper Company, St. Paul, Minn., has asked bids on steam-turbo generating equipment for installation at its power plant to increase the present output 2,500 kw., with the installation of auxiliary machinery.

Chillicothe, Ohio—The Chillicothe Paper Company has plans under way for extensions and improvements in its local mill, to include the installation of additional equipment in the paper-making department and super-calender and finishing rooms. The entire expansion is reported to cost in excess of $80,000. It is expected to begin work at an early date.

Minneapolis, Minn.—The Heywood Manufacturing Company, Fourth Avenue and 3rd street, North, manufacturer of paper boxes and containers, is said to be planning the construction of a new addition to its plant, to begin work early in the spring, reported to cost in excess of $40,000, with equipment. J. A. Heinrich is secretary and treasurer.

Marrero, La.—The Celotex Company, 645 North Michigan Avenue, Chicago, Ill., manufacturer of fibre wallboard products, has authorized a stock issue of $2,000,000, of which about $1,500,000, will be used for the proposed addition to its plant at Marrero, where an adjoining tract of land was recently acquired. The work will consist of a new manufacturing unit, dryer building about 1,000 ft. long, finishing mill, warehouse and other structures. Plans are now being drawn and awards for different features of the work will be made in the near future. B. G. Dahlberg is president; and C. G. Muench, vice-president. The latter will be in charge of erection.

Hartford City, Ind.—The Hartford City Paper Company has awarded a general contract to the Indiana Engineering & Construction Company, Central Building, Fort Wayne, Ind., for the erection of its proposed new addition, to be two-story and basement, 40 x 45 feet, estimated to cost about $45,000, on which work will soon begin.

Los Angeles, Cal.—The Western Waxed Paper Company, East Sixty-first street, will soon proceed with the erection of a new addition to its local mill, to be one-story, 30 x 150 feet, estimated to cost $50,000, for which a general contract has been awarded to the Austin Company, of California, 777 East Washington street. Headquarters are at Oakland.

Elizabeth City, N. C.—W. J. Pell, manager the Seaboard Paper Box Company, 850 Cooke Avenue, Norfolk, Va., is at the head of a project to establish and operate a new local plant for the manufacture of paper containers. A building has been secured at Burgess and Water streets, and machinery will be installed at an early date. The initial factory is estimated to cost about $25,000.

Stamford, Conn.—The Warner Brothers Company, Cedar street, manufacturer of paper boxes and containers, is considering the rebuilding of the portion of its mill destroyed by fire, December 26, with a loss reported at $15,000, including equipment.

Los Angeles, Cal.—Work is in progress on the proposed two-story factory at Tarleton and Twentieth streets for the Eureka Paper Box Company, to be 65 x 120 feet estimated to cost close to $50,000, with machinery, a list of which has been arranged. John M. Cooper, Rives-Strong Building, is architect, in charge.

New Companies

Seattle, Wash.—The International Wood and Sulphite Company, Inc., has been incorporated with a capital of $200,500, to manufacture pulp products, etc. The incorporators are T. Hollister Ralph A. Graves and K. O. Fosse. The company is represented by Donworth, Todd and Higgins, Hoge Building, Seattle.

St. Paul, Minn.—The Midway Paper Novelty Company has been incorporated with a capital of $20,000, to manufacture paper products. The incorporators are Leo. A. Krumpelman, 975 Lombard Avenue, St. Paul, and associates.

Gardner, Mass.—The Baldwin Fibre Corporation has been incorporated with a capital of $100,000, to manufacture fibre products. Earl F. Baldwin is president, and Frank A. Nichols, 81 Edgill street, Gardner, treasurer and representative.

Lynn, Mass.—The Leadol Carbon Paper Company, 50 Mall street, has filed notice of organization to deal in paper specialties. The company is headed by William F. Dooling and Edward W. Leahy.

Financial

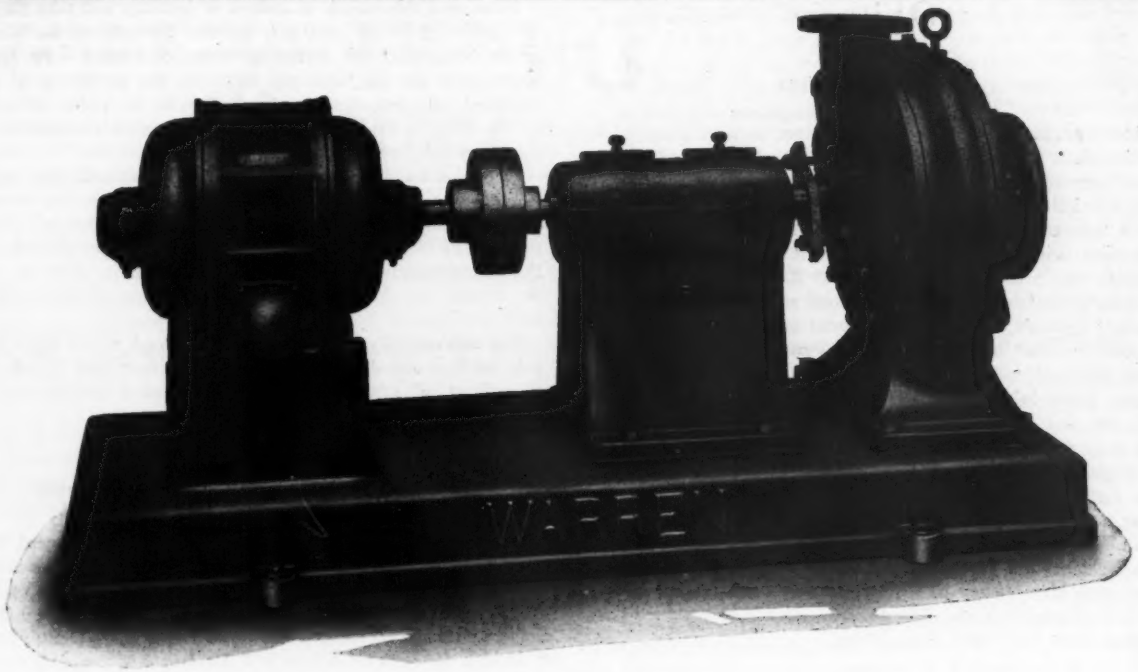
New York, N. Y.—The Grand Corrugated Paper Company, Inc., 128-32 Brooklyn street, has filed notice of increase in capital from $300,000 to $350,000, for expansion.

Evansville, Ind.—The Champion No-Leak Paper Dish Company, recently organized under Delaware laws, has filed notice of organization to operate in Indiana with capital of $87,000, preferred stock, and 650 shares of common stock, no par value. Alfred A. Klein, care of the Southwestern Broom Manufacturing Company, Evansville, Ind., is local representative for the company.

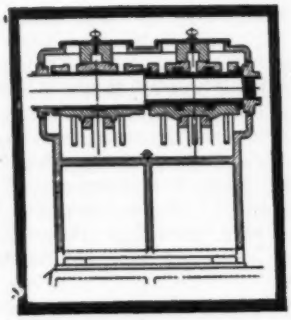
New York, N. Y.—The Inland Paper Board Company, Manhattan, has arranged for an increase in capital from $300,000 to $500,000, for general expansion.

Albany, N. Y.—The A. P. W. Paper Company, manufacturers of tissue papers, is arranging for a preferred stock issue of $1,500,000, the proceeds to be used in part for general financing and proposed expansion in operations.

Chicago, Ill.—The Ideal Paper Box Company, Garrison Grawoig, 1508 South Michigan Avenue, representative, has filed notice of increase in capital from $5,000 to $10,000, for extensions.



The savings in operation and maintenance will pay for this Stuff Pump



Detail of the bearings in the Warren Stuff Pump. They are renewable, split shell, babbitt lined, ring oiling bearings; thrust bearings being of the multi-collar marine type.

As shown, both bearings are supported in one long, extra heavy pedestal. Perfect alignment is assured.

The Warren Centrifugal Stuff Pump is the result of close cooperation between engineers familiar with pulp and paper mill pumping requirements and a manufacturing organization that has devoted itself exclusively to the building of fine pumps for twenty-eight years.

Every design and construction detail of this pump makes for high and sustained efficiency in handling pulped stocks up to 5 per cent consistency and over.

Renewable case liners make possible close running clearance, and therefore high efficiency, for the life of the pump. Perfect proportioning of passages and generous dimensions of all parts assure freedom from clogging, and dependable operation throughout years of service.

Let our engineers go over your stock handling requirements with you and they will figure exactly what you can save by installing Warren Stuff Pumps.

Write for bulletin containing complete information.

Warren

Steam Pump Company—Warren, Mass.

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Obituary

Isaac N. Hosford

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., January 4, 1926.—Word has been received here of the death at Passadena, Cal., of Isaac N. Hosford, 69, a former paper manufacturer and organizer of paper mills. His brother, the late Benjamin Hosford, was a well known paper manufacturer here coming in 1880 to take charge of the Winona Paper Company being its first treasurer. The late R. F. Pulsifer, of Boston, was president. They lived at 203 Pine street and were socially prominent here. Mr. Hosford was very exacting in his business methods. In 1889 the Hosfords went to Springfield to live.

Isaac Hosford was an occasional visitor here. He graduated from Harvard and began his paper making career at Pepperell, Mass. Later he went to Bridgeport and still later, in the early '80's was one of the organizers of the Haverhill Paper Company and its first treasurer. In 1899 this mill was sold. In 1884 he helped organize the Glen Paper Company at Berlin, N. H., and in 1903 was instrumental in organizing the St. Croix Paper Company being a vice president and later president of the concern until his death. He married Miss Elizabeth K. Lord, of Saxonville, who survives him with two daughters, Mrs Oswald Barrows, of New York and Mrs. James Engle, of Pasadena, Cal. Mr. Hosford lived in Haverhill from 1882 to 1889 since which time he had lived in New York and New Jersey.

Henry F. Fulling

Henry F. Fulling, founder of the Henry F. Fulling Company, Inc., twine, paper and specialties, 230-34 West 17th Street, New York, died December 23 of pernicious anaemia.

Mr. Fulling was aged 52 years. He founded the Henry F. Fulling Company in 1897 and the business was incorporated January, 1920. Mr. Fulling at that time was adverse to continuing business but decided to "give the boys a chance" and retired about a year and a half after the corporation had been formed. The present officers of the company are Charles Greif, president, and Eugene F. Brennan, secretary and treasurer, by whom the business will be continued as usual.

Mr. Fulling is survived by his wife, his mother and one son. The interment was in Woodlawn cemetery.

Walter O. Whitaker

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 4, 1926.—Walter O. Whitaker, mill manager of the Natick Box and Board Company for a long term of years, prior to which he was associated with the Uncas Paper Company, Norwich, Conn., died January 3, at the Carey Hill Hospital Brookline, Mass., following an operation. Mr. Whitaker was aged about 58 years. He was a man of the highest character, generous, kind and highly respected by all in the box board community.

Funeral services were held at his home, 17 Beacon street, Tuesday and interment was at Norwich, Conn.

Future Center of Paper Industry in South

[FROM OUR REGULAR CORRESPONDENT]

NASHVILLE, Tenn., December 28, 1925.—"Future area of the vast paper pulp industry will be centered in Eastern Tennessee, Western North Carolina and Southeastern Kentucky, because the high railroad rates in New England and the northeastern states, coupled with fast diminishing forests, are cutting too deeply into the profits of operating companies," declared V. P. Edwards, of Madison, Wis., representative of the United States government service and the Forest Products Laboratories in an address before the Knoxville Technical Society at the Civic Building.

How soon this switch in centers of industry will take place was not estimated by the paper pulp expert. He declared that the huge prices being paid for spruce in Maine and other New England state could not be borne up under by the producers of paper. Railroad rates, too, almost equal the cost of the timber when placed at the mills, he said, and this would soon cause a change to more heavily wooded sections.

In explaining the industry in detail, Mr. Edwards took occasion to state that the public has been misinformed as to the extent the pulp industry is eating into the forests of this country. "Only 5 per cent of the timber that is cut is used in the pulp industry, and this is comparatively small when other industries that depend on the forests for their resources are taken into consideration," he said.

The address was illustrated with scenes of actual work in the pulp industry and detail drawings of machinery used in processing of making all grades of papers from heavy binding paper to finest stationery.

Bids and Awards For Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 6, 1926.—The Government Printing Office has received the following bids for 8,000 pounds of 19-24 80 white blotting paper; R. P. Andrews Paper Company, at 9.77 cents and 8.34 cents per pound; Mathers Lamm Paper Company, 14.5 cents; Virginia Paper Company, 7.97 cents; Dobler & Mudge, 10 cents; Lindemeyr & Harker, 9.95 cents, 11.9 cents, 10.95 cents and 13.95 cents.

The P. H. Gladfelter Company has been awarded the contract for furnishing the Government Printing Office with 25,500 pounds (500 reams) of 25 x 38 50, white antique book paper at 6.25 cents per pound, bids for which were received on December 14.

Barton, Duer & Koch have been awarded the contract for furnishing 1,800 pounds (100 reams) of 16 x 21 18 white bond paper at 30.95 cents per pound, bids for which were received on December 11.

The Government Printing Office has received the following bids for 12,000 pounds Gray Pressboard, 30 x 36: Bird & Son, Inc., 11.5 cents per pound; The LaBeiteaux Company, 12.15 cents; Carter, Rice & Co., Corporation, 14.7 cents; Mathers-Lamm Paper Co., 11.63 cents; R. P. Andrews Paper Co., 14.74 cents, Barton, Duer & Koch Paper Company, 15.5 cents; T. A. Cantwell & Co., 15.45 cents; Virginia Paper Company, 15.73 cents; Maurice O'Meara Company, 12 cents; Reese & Reese, 15.44 cents; Dobler & Mudge, 19 cents; Philip Rudolph & Son, Inc., 15.5 cents; and Old Dominion Paper Company, 13.49 cents.

The Printing Office has also received bids as follows for 3,000 pounds Yellow Ledger Paper, 21 x 32 57½, and 6,100 pounds White Bond Paper, 17 x 28 30½: American Writing Paper Company, 15.85 cents per pound; R. P. Andrews Paper Company, 20 cents; Barton, Duer & Koch Paper Company, 15 cents; Virginia Paper Company, 17.81 cents; Old Dominion Paper Company, 21.4 cents and 20.4 cents; Dobler & Mudge, 17 cents and 16.5 cents; Aetna Paper Company, 16.16 and 14.69 cents; and Samuel S. Alcorn, 24.5 cents.

The Government Printing Office will receive bids on January 8 for 40,000 pounds (28,000 sheets) of 24½ x 34 No. 35 box board. Bids will also be received on January 11 for 20,000, or 36,000 pounds of 25 x 30 No. 60, No. 2 quality binders board.

The Government Printing Office will receive bids on January 8 for 6,000 pounds (100 reams) of 31⅛x45½ , 60 white book paper 50 per cent rag. Bids will also be received on the same date for 3,150 pounds (100 reams) of 24 x 38 31½ light pink bond paper, 30 per cent rag.

Lindemeyr & Harker have been awarded the contract by the Government Printing Office for furnishing 10,000 pounds (333 reams) of 12 x 18, 30, wood manila tag board at 4.9 cents per pound, bids for which were received on December 14.

New York Trade Jottings

C. R. Gibson & Co., Lithographers, are now installed at their new address, 118-120 East 18th street, corner of Irving Place, New York.

* * *

"Prosperity in America, A Message for 1926," is the title of an optimistic communication broadcasted by Royal S. Kellogg, secretary of the News Print Service Bureau.

* * *

O. L. Berger, of the G. D. Jenessen Company, 200 Fifth avenue, is sailing January 16, for Norway and Sweden to spend a month or two on business.

* * *

G. Heijkenskjöld, civil engineer of Stockholm, Sweden, is a New York visitor. He is studying conditions in the sulphite pulp industry in this country.

* * *

Royal S. Kellogg, secretary of the News Print Service Bureau, with offices at 342 Madison Avenue, New York, announces that the next meeting of the bureau will be held in the Ritz Carlton Hotel, Montreal, on Friday, January 29.

* * *

Fred A. Lehy, vice-president and sales manager of the Eastern Manufacturing Company, of 292 Madison Avenue, New York, spent this last Christmas on the high seas. He sailed on the steamer *Minnetonka* from New York on December 19 last for a flying business trip to England, Italy, France, Belgium and Scandinavian countries.

* * *

The January number of the International Paper Monthly contains an illustrated specimen of printing on Ticonderoga special cover paper, which is manufactured by the Ticonderoga Pulp and Paper Company mills recently acquired by the International Paper Company. This same paper is also used as cover for the International paper monthly. The inside paper in the magazine is Ticonderoga special magazine.

* * *

Kuttroff, Pickhardt & Co., Inc., wrote as follows: Please be advised that on January 1, 1926, Kutroff, Pickhardt & Co., Inc., will discontinue the importation and sale of dyestuffs. The General Dyestuff Corporation, of 230 Fifth Avenue, New York, has purchased our merchandise stock and will hereafter offer to the trade the dyestuffs manufactured by the Badische Anilin and Soda-Fabrik, Ludwigshafen o/Rh., as well as the other dyestuffs which we have supplied.

Work Proceeds on New St. Frances Mill

The Fort Frances Pulp and Paper Company, Fort Frances, Ont., some thirteen years ago erected a news print mill and installed two machines, which are turning out today one hundred and thirty tons of paper. A large proportion of the wood required for the mill is purchased from the farmers in the Rainy River district, and about seventy-five per cent of the output of the mill is exported to the United States, the Western Canadian Market not being sufficient to absorb the production. Early in 1925, an agreement was made whereby an additional mill was to be erected in the town, with an output of one hundred and fifty tons of news print daily. This plant will be completed and in operation by the end of 1926. The combined production of the Fort Frances Company's mills will then be between two hundred and fifty and three hundred tons of paper daily and, in the operations about five hundred men will be employed. Work is already well under way on the new mill and some two hundred men will be engaged all winter in getting in the foundations and steel work for the structure, trainshed, finishing room, etc. Concurrent with the building of the mill is the development of the Seine river water power, situated on the Seine river east of Fort Frances. Approximately twenty-five thousand horse power is available in the three units on this waterway. The paper mill interests have been negotiating for the development of this power and its transmission to Fort Frances. Work on the initial development has been carried on for some time. The transmission line has been surveyed and the right of way will be cut out this winter, so that, on the completion of the news paper mill at Fort Frances, the additional power necessary will also be available. It is understood that on the completion of the power plans, the Fort Frances Pulp and Paper Company has under consideration the building of additional industries and the extension of a railway line to connect Fort Frances with Kenora, Ont.

Hamilton T. Disbrow Fifty Years in Paper Trade

Hamilton T. Disbrow, president of Coy, Disbrow & Co., Inc., 309-311 Canal street, New York, is celebrating this week the fiftieth anniversary of his connection with the paper industry. On January 1, 1876, he joined his brother, H. Grinell Disbrow, in forming the firm of Disbrow Brothers, and located at 58 Warren street, New York, next door to the old Libby Hotel, long since torn down and replaced by buildings now occupied by manufacturing concerns.

A few years later he withdrew from the firm of Disbrow Brothers and accepted a position as salesman with Wilkinson Brothers Co., then located at 72-74 Duane street, with which concern he remained until the organization of Coy, Hunt & Co., Inc. He assisted in organizing this concern in 1898 and was a director and vice president of this company. In February, 1922, he withdrew from Coy, Hunt & Co., Inc., to assist in the organization of Coy, Disbrow & Co., Inc., in which organization he was elected president and which position he still maintains.

In the fifty years many changes in the paper business have occurred. A number of the concerns whose names were among the leaders in the manufacturing end as well as among the jobbers have long since disappeared. There are, however, a few firm names that were prominent in the trade fifty years ago that are still leaders among the jobbers today. Fifty years ago the paper industry was located largely in Beekman and Duane streets, a few jobbers being located on John street. There were no sky-scrapers in those early days.

When our country cousins visited us we took them to Trinity church at Broadway and Wall street, paid twelve cents to climb up into the steeple of the church to get a view of the city and harbor. We had no electric railways, no telephones, typewriting machines or bridges over or subways under the East and North Rivers. The department stores were located at Grand, Canal and adjacent streets.

The store now occupied by Coy, Disbrow & Co., Inc., at 309-311 Canal street is part of the building that was then occupied by Arnold, Constable & Co., as their up-town retail store. A. T. Stewart, 10th street and Broadway, was considered way up-town. Brooks Brothers, the well known tailors were then at Catherine street, near the East River. The terminal of the horse street cars at 59th street in those days was considered as being in the country.

The depot of the New York Central railroad was located at 30th street and 10th Avenue from which point the day coaches were transferred by horse power through Hudson street to Chambers street and Warren street and connected up with a horse car that took the passengers to Broadway and Warren street. The New York, New Haven & Hartford Depot was located at 26th and 27th streets and 4th Avenue. The coaches from this depot were transferred by horse power through 4th Avenue and the Bowery to White street, where the passengers were transferred to horse cars for down-town points.

Straw paper, printed wrapping paper and paper bags were among the staple articles of trade.

PAPER TRADE JOURNAL
ESTABLISHED 1872

With Which Is Combined

PAPER
The Magazine of the Paper Industry

HENRY J. BERGER, Editor

Member A. B. C. Audit Bureau of Circulations

Vol. LXXXII New York, January 7, 1926 No. 1

COMING EVENTS

American Paper and Pulp Association, Convention and Meeting of Affiliated Associations, Waldorf-Astoria, February 22-25. Annual Banquet, Grand Ball Room, Thursday, February 25.

National Paper Trade Association, Convention, Wa'dorf-Astoria, February 22-24. Annual Banquet, Grand Ball Room, Wednesday, February 24.

Technical Association of the Pulp and Paper Industry, Convention, Waldorf-Astoria, February 22-25. Annual Banquet, Hotel Commodore, Tuesday, February 23.

Salesmen's Association of the Paper Industry, Convention, Waldorf-Astoria, February 23. Annual Dinner, Roof Garden, Tuesday, February 23.

Canadian Pulp and Paper Association, Convention and Meeting of Affiliated Bodies, Ritz Carlton Hotel, Montreal, January 27-29. Technical Section, January 27-28. Woodlands Section, January 27 and 29. Annual Dinner, Friday, January 29.

GOOD OUTLOOK FOR 1926

Continuing good business for the immediate future is the outlook at the beginning of 1926, according to the current issue of the "Guaranty Survey," which has just been issued by the Guaranty Trust Company of New York.

"The end of the year," the 'Survey' states, "finds business as a whole considerably more active than at the close of 1924. The gains in most lines have not been striking, but they have been fairly regular. As in each of the two years preceding, there was a distinct recession in industrial output and in the volume of trade during the spring and summer. The decline was by no means so sharp, however, as that of last year; and, with the substantial recovery of the last few months, nearly all branches of business will be able to report satisfactory results from the year's operations, and to look forward at the beginning of 1926 with the expectation of continuing good business in the immediate future.

"Basic industrial output reached its peak in the month of January, which marked the culmination of the sharp recovery from the depression of 1924. The trend during the first half of this year was distinctly, though not violently, downward. After a temporary recovery in July a new low point for the year was reached in August. This figure was followed by two marked upward movements, bringing the index for October to the highest point recorded since April. Under these conditions it is natural that employment should be large and wages high.

"An encouraging aspect of the situation this year is the fact that large industrial output has been balanced by an active movement of goods through distributive channels. It appears that both wholesale and retail trade in many lines will establish new high annual records. Not since the days of the post-war price inflation have sales of consumers' goods been so large as this year.

Such general business indices as loadings of railway freight cars and payments by check, as well as the more direct evidence of sales by wholesale and retail dealers, agree in pointing to a record-breaking volume of general trade.

"The total amount of payments by check, as evidenced by debits to individual accounts by banks reporting weekly to the Federal Reserve Board, have run consistently above last year's totals. In the first eleven months of 1925 debits by banks outside of New York City were 12 per cent larger than a year ago.

"A large volume of retail trade is clearly indicated by sales of department stores and mail order houses. Sales of 359 department stores throughout the country were about 4 per cent larger in the first ten months of this year than in the corresponding period last year. A similar comparison shows a gain of 15 per cent in sales of the two leading mail-order houses, which are more largely dominant than retail establishments in general upon farmers' purchasing power.

"It is clear from these and other indications of the activity of distribution that the general tendency this year has been for goods to move rapidly into consumption, and not to accumulate in the hands of manufacturers or dealers. This is perfectly natural in view of the high level of purchasing power enjoyed by nearly all groups of consumers as a result of active industrial operations, with large employment, high wages and generally adequate margins of profit.

"Such a situation provides firm ground for the anticipation of continued high levels of industrial and commercial activity in the early part, at least, of the new year. General conditions in the commodity markets justify an optimistic attitude as a year ago. And the marked improvement in some of the basic industries which have only recently emerged from depression is an additional source of confidence.

"Indeed some students of the situation express the thought that present conditions are so good generally speaking that it is not reasonable to expect their unbroken continuance and have the feeling that security values based on this high level of business cannot be maintained indefinitely.

"It is only in a few directions that a tendency toward overexpansion has appeared, rendering the situation as a whole perhaps less reassuring than that which prevailed at the end of last year. These possible sources of danger, which are discussed in the following pages, represent a certain relaxation in some lines in the conservative attitude which has characterized the policies of business men in recent years. As long as the present abnormal situation in international finance persists, the maintenance of this attitude will be essential to orderly progress."

PAPER TRADE EMPLOYMENT

November employment figures in the paper pulp and paper box industries have just been made public by the Bureau of Labor Statistics, Department of Labor.

The Bureau received replies from 207 paper and pulp plants which reported their employment in October at 55,383, decreasing in November to 55,180 a decrease of 0.4 per cent. The payrolls

in these mills on the other hand increased from $1,475,840 in October to $1,499,121 in November, an increase of 1.6 per cent.

One hundred and sixty-seven paper box plants reported their employment in October at 19,727 increasing in November to 20,076 an increase of 1.8 per cent. The payrolls in these plants also increased from $431,645 in October to $449,066 in November, an increase of 4 per cent.

Replies were also received by the Bureau from 199 paper and pulp mills which reported their employment in November of last year at 52,131 increasing in the same month of this year to 52,928, an increase of 1.5 per cent. The payrolls in these plants also increased from $1,363,711 in November of last year to $1,442,253 in the same month of this year, an increase of 5.8 per cent.

One hundred and forty-eight paper box plants gave their employment in November of last year at 17,118 increasing in November of this year to 17,466 an increase of 2 per cent. Their payrolls also increased from $371,162 in November of last year to $393,211 in the same month of this year an increase of 5.9 per cent.

G. W. Dearden Goes With Rourke-Eno Co.

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., January 4, 1926.—G. Walter Dearden, sales promotion manager for the Shrathmore Paper Company has resigned to become secretary and sales manager of the Rourke-Eno Paper Company of Hartford, Conn. A farewell banquet was tended him last Thursday night at the Nayasset club by President Horace A. Moses of the company and Mr. Dearden was presented with a gold watch with the dates 1901-1926 the years of service with the company. Mr. Dearden was advertising manager for 17 years before becoming sales promotion manager. He leaves behind him a long and constructive record of advertising and sales progress. He has been identified with advertising campaigns and policies that have made advertising history.

He originated the first combined sample mill books ever issued in addition to the Strathmore cabinet and color grammar. The beautiful specimen books issued by the Strathmore Company show his discriminating taste for fine design, typography printing and binding. He was one of the founders of the Association of National Advertisers and is a past president of the Papermakers Advertising Club. He was also one of the founders of the Advertising Club of Springfield. He was foremost in having the name of the Mittineague Paper Company changed to the Strathmore Paper Company. He is known to the jobbing trade from Maine to California. He is a member of Mt. Orthodox Lodge Masons and of Melha Temple. He is married and has three children.

Connecticut Valley Superintendents to Meet

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., January 4, 1926.—The Connecticut Valley Division of the American Pulp and Paper Mill Superintendents Association will hold its first get-together meeting of 1926 at the Hotel Nonotuck, Holyoke, Mass., Saturday, January 16.

The business session to begin at 2 o'clock will be known as "Brown Company Day." Representatives of the Brown Company will be present and give talks on the product of their company. Those present may ask questions and they will be answered by the speakers.

The banquet will be held at 7 o'clock in the banquet hall of the Hotel Nonotuck and an entertainment will be presented that will be certain to make the trip worth while. After the banquet there will be dancing. Special arrangements will be made to entertain the ladies.

Box Board Production for November

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 21, 1925.—The Department of Commerce announces November figures on the operations of box board manufacturers, based on reports of 89 firms operating 111 plants The capacity data in the following table vary according to the normal number of working days in each month, Saturdays, Sundays and holidays being excluded, since the five-dav week was adopted by about 80 per cent of the mills.

Year and Month	Operation: Inch hours Capacity	Operation: Inch hours Operated	Operation: Per cent of capacity	Production: Tons Capacity	Production: Tons Output	Production: Per cent of capacity	Orders received	Unfilled Orders (end of month)
1924							Tons	
August..	7,960,302	7,973,129	100.2	185,619	183,570	98.9	202,919	122,927
Sept....	7,960,302	8,036,712	100.9	185,619	188,669	101.6	168,299	103,056
Oct....	8,718,426	8,422,014	96.6	203,297	196,633	96.7	180,846	87,563
Nov....	7,202,178	7,546,373	104.8	167,941	170,550	101.6	174,184	94,711
Total (11 mos.)	97,060,992	88,701,925	91.4	2,265,512	1,974,116	87.1	1,966,659	.....
1925								
Jan....	7,960,302	8,388,897	105.4	185,619	199,633	107.5	199,649	112,911
Feb....	7,600,440	7,550,968	99.3	177,320	177,292	100.5	162,724	100,403
March..	8,360,484	7,569,995	90.5	197,186	179,067	91.0	169,924	90,062
April...	8,360,484	7,654,378	91.6	197,186	185,866	94.3	169,914	79,127
May....	7,980,462	7,111,776	89.1	188,223	163,956	87.1	175,246	83,415
June...	8,360,484	7,983,150	95.5	197,186	190,310	96.5	193,564	92,022
July....	8,740,506	8,272,036	94.6	206,149	196,522	95.3	216,013	111,919
August..	7,980,462	8,069,721	101.1	188,223	196,527	104.5	211,385	119,248
Sept....	7,980,462	8,152,403	102.2	188,223	*198,749	105.6	191,840	109,191
Oct....	8,360,484	*8,438,784	100.9	197,186	*204,492	*103.7	*207,178	*101,981
Nov....	7,980,462	7,770,106	97.4	188,223	190,136	101.0	192,451	102.786
Total (11 mos.)	89,665,032	86,962,214	97.0	2,110,724	2,082.550	98.7	2,089,888	.....

Year and Month	Shipments of boxboard	Stocks of boxboard end of month	Consumption of waste paper: Tons Capacity	Consumption of waste paper: Tons Consumed	Consumption of waste paper: Per cent of capacity	Stocks of Waste Paper (end of month): On hand	In transit	Unshipped purchases
	Tons						Tons	
1924								
August..	184,941	48,935	175,938	181,752	103,3	161,793	17,002	34,919
Sept.....	191,203	46,401	175,938	182,521	103.7	172,240	15,319	41,766
Oct.....	198,352	44,682	192,694	189,187	98.1	175,946	14,921	27,804
Nov.....	169,018	46,214	159,182	162,771	102.3	164,065	15,523	29,423
Total (11 mos.)	1,972,532	.....	2,145,230	1,884,855	87.9	.....	.....	.....
1925								
Jan.....	195,501	52,466	175,938	193,285	109,9	172,382	18,846	34,974
Feb.....	176,101	53,960	167,910	170,023	101.3	172,456	16,635	27,110
March..	180,418	51,835	184,778	170,363	92.2	176,035	13,199	22,948
April...	179,772	57,212	184,778	170,487	92.3	172,223	14,307	32,590
May....	168,353	53,327	176,379	159,095	90.2	174,726	12,686	26,129
June.....	184,928	59,452	184,778	179,953	97.0	166,467	13,872	25,246
July....	190,667	64,600	193,177	184,295	95.4	160,099	11,953	34,358
August..	204,766	55,560	176,379	187,301	106.2	149,984	14,598	29,761
Sept.....	*202,599	*51,699	176,379	187,620	106.4	155,476	13,866	35,721
Oct.....	*213,019	46,054	184,778	*189,684	*102.7	*168,305	18,587	30,324
Nov.....	191,646	44,541	176,379	179,026	101.5	165,289	15,010	31,918
Total (11 mos.)	2,087,770	.....	1,981,653	1,971,132	99.5	.....	.....	.....

* Revised.

Paper Man Gets Pat Royal Flush

On December 14 a party of New York paper jobbers made a trip to the mills of The Champion Fibre Company, at Canton, N. C., and after spending several days there, stopped off at The Champion Coated Paper Company's plant at Hamilton, Ohio, to visit the company's mills at this point.

While these gentlemen were traveling southward in The Champion Coated Paper Company's private car "Federal" at 3.38 p. m., Eastern standard time, and while enjoying a game of poker en route, Mr. M. H. Freimark, representative of The American Paper Mills Corporation, New York City, dealt to David L. Engel, No. 9 Bond Street, New York City, a "pat" royal flush. The most astounding part of this hand was that it was dealt in the following order. Ten, Jack, Queen, King, Ace (of spades.) The cards used in this remarkable Poker hand were made by the U. S. Playing Card Company of Cincinnati, Ohio.

While at Hamilton these men drew up a sworn statement to the above effect, and the statement together with the hand was sent to Mr. Allison F. Stanley of the U. S. Playing Card Company, who took a photograph of the sworn statement.

Mr. Engel naturally was very much enthused over this "pat" royal flush and is going to frame this sworn statement together with the hand.

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AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

Concentration in Boilers*

By Grant D. Bradshaw

The importance of a knowledge of the effect and amount of concentration in boilers is much more important under modern operating conditions than it was twenty years ago. At that time boilers were small and were operated at low rating. Very little attention was paid to the treatment of boiler feed—first, because the importance of such treatment was not fully realized from an efficiency standpoint; second, because the cost of coal was much less; and third, because, as time goes on, the natural sources of feedwater supply have become more and more contaminted.

Under present conditions, with boilers of larger and larger size being installed, with less and less water capacity per horsepower developed, and with higher and higher rating, the necessity of taking concentration into account is more and more evident.

In addition to this, as we progress higher and higher in the scale of efficiency of boiler and plant operation, troubles which were formerly taken for granted or considered as insurmountable, are now being taken into consideration, and the remedy sought. The advent of superheaters and a record of the total temperature of superheated steam which most modern plants now keep with recording thermometers shows up at once the throwing of water by a boiler. This formerly in many cases passed unnoticed. It now presents in a visual way evidence of what is going on in a steam line; whereas before, troubles due to foaming and priming, unless they were of an extent to do serious damage, were not evident except in excessive troubles due to wear and improper lubrication, which in years past were usually blamed on the cylinder oil.

A Comparatively Recent Development

Of recent years, more and more attention has been focused upon the relation of degree of concentration to the tendency of boilers to foam, but progress along these lines has been of comparatively recent development, and a comparison of results from different plants shows wide variations. In some plants, boilers cannot be operated without becoming wild when the concentration is over 150 grains, or sometimes as low as 100 grains per gallon. In other cases the concentration can be run up to 1,000 to 1,500 grains per gallon, or even higher, without causing a boiler to become uneasy. One of the most satisfactory studies of this relationship has been given by C. W. Foulk, of Ohio State University, published in *Industrial and Engineering Chemistry*.[2] Another exhaustive article is one by R. E. Hall, of Pittsburgh, in *Mechanical Engineering*.[3]

The amount of concentration which will cause foaming depends not only upon the amount of salt contained in the water, but also upon the softness of the water and upon the concentration of the small amount of oil, vegetable matter, etc.

In testing the water for softness, for instance, in one case a single drop of soap solution when shaken in the sample may produce a great deal of foam. If the water is harder, however, it may take ten or a dozen drops to produce this same amount of foam. In this case the soap solution represents the concentrated soap-making materials in the concentrated boiler water. If we could determine the concentration of the actual foam-making elements as separate from the tests of concentration usually taken and consider these results in their relation to what is usually termed boiler concentration, it might be possible to correlate many varying results which now appear contradictory. Again, the design of the boiler is to some extent responsible, in that it is the design and circulation of the boiler which produces agitation. This again, can be comparable to the soap test referred to. Even in a soft water, simply the dropping in of a drop of soap solution will not cause a foam, until the bottle is violently shaken. In the same way in a boiler, if the circulation is continuous and of uniform velocity, and does not produce violent agitation in local spots, the amount of foam will be much less than in a boiler where there is violent local agitation, other conditions being equal.

Point at Which Foaming Will Occur

According to Mr. Foulk, the point at which foaming will occur —in other words, the degree of concentration necessary to cause foam—is dependent upon the relation of the minute solids to the soluble salts in the boiler water. In my opinion, however, of even more importance is the concentration of the actual materials which increase the surface tension to a point at which bubbles different points above which concentration should not be carried. This point in any given case is, in general, fairly well defined although it is usually preceded more or less by a gradual increase in the amount of moisture carried out of the boiler drum with the steam to the steam line. Accordingly in each particular steam plant, with its own particular source of feedwater supply and treatment, the degree of concentration at which trouble is to be expected can be fairly well determined.

Of course, it is impossible to prevent concentration as long as soluble impurities are carried into the boiler with the feedwater. As the water is there evaporated, the impurities will concentrate in the boiler, and the extent of this concentration will be determined by the relative amount of moisture which is carried out of the boiler as moisture. In fact, F. R. Low, former president of the

* From the Proceedings of the Engineering Society of Western Pennsylvania.
[1] Andrews-Bradshaw Co., Pittsburgh, Pa.
[2] Vol. 5 16, p. 1121.
[3] Vol. 5. 46, p. 810.

American Society of Mechanical Engineers, puts it very clearly in an editorial in *Power*,[4] entitled "Blowing Down a Boiler Through the Steam Nozzle." He says, "According to the first principles of arithmetic the impurities from a boiler over a long period must equal those brought in by the feedwater."

An Example

Assume, for example, a properly treated water which does not deposit scale in the boiler. If this feedwater contains 15 grains of impurities per gallon, these 15 grains must come out of the boiler, with the amount of actual water taken out of the boiler *as water*. If this amount is 2 per cent of the feed, the concentration will build up to a point where this 2 per cent will carry away in a given length of time the total amount of impurities carried into the boiler in that length of time. In this particular case, 2 per cent represents one-fiftieth of the total amount of feed. Therefore, this one-fiftieth must be of a concentration fifty times the concentration of the feedwater—in this particular case 750 grains, or 17,750 parts per million. In other words, the concentration will vary directly with the quality of the feedwater and inversely with the percentage of water blown out of the boilers. Whether this be blown out through the steam nozzle or through the blowoff valve is immaterial.

In the interests of efficiency this blowdown should be kept as small as possible. In other words, the concentration should be allowed to build up to the maximum point at which the boiler can be operated without becoming "wild," whether this point be 150 grains per gallon, or 2,000 grains per gallon.

Mr. Hall's Recommendations

Mr. Hall in his paper in *Mechanical Engineering* recommends, from a scale-forming standpoint with his particular treatment, that the concentration be kept below 2,000 parts per million, which is only 118 grains per gallon. This may be correct from a treatment standpoint, but the boiler operator must balance the slight increase in scale which might be formed according to Mr. Hall's theory, against the actual material loss occasioned by the excessive blow down necessary with Pittsburgh waters. For instance, a 20-grain or even 30-grain water is not uncommon in this district. To keep the concentration down to 117 grains per gallon with a 30-grain water would require blowing down of roughly 25 per cent, or a loss of heat from this practice of roughly 6 per cent. If, however, this particular plant could be operated with a concentration of 600 grains instead of 117 the blowdown would be 5 per cent instead of 25 per cent, and the heat loss only 1.2 per cent—a direct saving of 4.8 per cent in efficiency, and such a saving will pay for a lot of labor for boiler cleaning.

These figures are really very conservative because I have assumed that the concentration of the water blown off through the blowdown connection is of as great concentration as the average in the boilers. Actually, it is usually much less, being diluted with fresh boiler feed due to the method by which the feed is introduced into the boiler circulation. The heat lost from this source in many cases is in practice much greater than the figures I have given. This will be again referred to later.

By blowoff, of course, I mean all water blown out of the boiler whether into the steam line with the steam or into the sewer through the boiler blowoff connection.

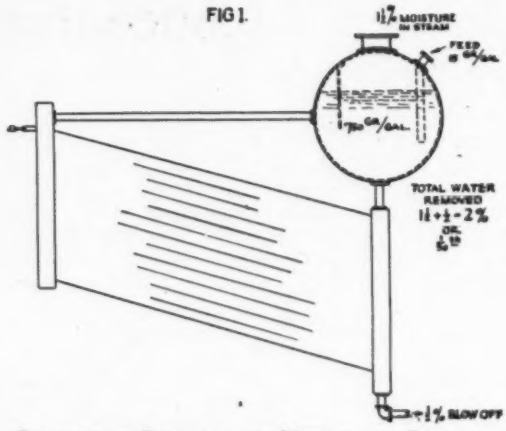
We can better visualize conditions by examining Fig. 1.

What This Means in Terms of Frequency

To see what this means in terms of frequency and amount of blowdowns, take, for instance, this cross-drum boiler with drum 54 inches in diameter, about 15 feet long. A blowdown of four inches would amount to roughly 170 gallons. If the output of the boiler is 1,000 boiler horse-power, and the quality of the feedwater is 15 grains per gallon, we are introducing into the boiler 54,000 grains of impurities per hour. If, for instance, the point at which this boiler starts to foam violently is a 300 grains per gallon, it will be necessary in the interest of safety to blow this down when the concentration reaches a point of, say, 250 grains. Each blowdown will, therefore, take out of the boiler 250 × 170, or 42,500 grains total, which means that in this particular case the boiler would have to be blown down four inches every 45 minutes in order to keep the concentration from rising above 250 grains if no moisture passed out with the steam.

With 1.5 per cent going out with the steam, this would take out 54 gallons of water per hour at a concentration of 250 grains per gallon, or 13,500 grains per hour, leaving 40,500 to be removed through the blowoff valve, or a blowdown about once each hour. In a case like this, if the water tender should forget himself and let the boiler run, say for two hours, without blowing down, long before this time the critical point would have been passed and the boiler would be throwing water violently into the steam lines. It is conditions such as these that have been responsible for a great many of the wrecked cylinder heads that we all run across at different times in our experience. If we had to keep the concentration below 117 grains per gallon with 1.5 per cent moisture, the steam line would take 6,350 grains per hour. Each blowdown would take 20,000 grains and the boiler must be blown down every 25 minutes.

FIG 1.



RELATION OF BLOW-OFF AND MOISTURE IN STEAM TO CONCENTRATION

An Illustration Cited

An illustration can be cited. At one of the big industrial plants they report the foaming point at between 11,000 and 12,000 parts per million. They try, however, to keep the maximum concentration below 8,000 parts per million (465 grains per gallon) by having one man whose duty it is to manipulate surface blowoffs. Even with this extreme care at times the concentration gets past the danger mark and the boiler foams over into the steam line to relieve itself.

Using 15-grain feedwater is equivalent to putting into a boiler over 5,500 pounds, or nearly three tons of impurities every month for every 1,000 horsepower developed, and it takes a pretty high concentration to get rid of this without losing a lot of water and heat.

Feedwater treatment is nowadays, of course, considered long past the point of discussion, as to whether or not it is an economy where one has a feedwater containing impurities, which means in 99 out of 100 cases. Treating the feedwater, however, in order to get rid of the 15 grains, is pursuing a will-o'-the-wisp. This is readily evident from a consideration of the chemistry of feedwater treatment. We will take, for example, the simplest case—that is calcium sulphate, which, by the way, is the important

[4] Vol. 61, p. 27.

scale-forming impurity in our water in the Pittsburgh district and Western Pennsylvania in general.

Reaction: $Ca\,SO_4 + Na_2\,CO_3 = Ca\,CO_3 + Na_2\,SO_4$
Atomic weights: $136 + 106 = 100 + 142$

The Most Common Reaction

You can see from the above the most common reaction in the treatment of feedwater by soda ash. If there is free acid present, this is neutralized by lime, which in turn again forms calcium sulphate, which is then treated with soda ash to form calcium carbonate and sodium sulphate. The calcium carbonate is a precipitate, finely divided, to be sure, but can be settled and filtered out, at least to a great extent. The sodium sulphate, however, is as soluble as ordinary table salt, and no commercial method of eliminating this from the water is at present known. If the feed-water is filtered after the reaction, and settling has taken place, the greater part of the calcium carbonate can be removed, but this still leaves the sodium sulphate, and for every 100 grains of calcium sulphate which have been removed there are left behind 104 grains of sodium sulphate. If the feed-water is not filtered, but is treated —for instance, in the feedwater heaters, or even by the injection of a solution of soda ash into the feedwater line—it will carry not only the sodium sulphate, but the calcium carbonate as well, and the removal of 100 grains of the hard scale-forming calcium sulphate will be accomplished by substituting 178 grains of other impurities.

If treated with caustic soda we still have the same amount of sodium formed and, as far as concentration is concerned, have not bettered matters. The same remarks apply to treatment with sodium phosphate.

$$(2\,Na_3\,(PO_4) + 3\,Ca\,SO_4 = 3\,Na_2\,SO_4 + Ca_3\,(PO_4)_2$$

An actual example of a typical untreated water of the Pittsburgh district, and the same water treated in a lime-soda-ash system is given as follows:

	Raw	Treated
Volatile and organic	1.15	0.65
Silica	0.45	0.45
Calcium carbonate	2.43	0.88
Calcium	11.32	....
Magnesium sulphate	4.86	....
Magnesium hydroxide	....	0.48
Sodium carbonate	....	2.48
Sodium sulphate	0.53	18.46
Sodium chloride	9.40	10.22
Sodium hydroxide	....	0.94
Total grains per gallon	30.14	34.86

From this it can be seen that treating with lime and soda ash not only does not reduce the impurities in the feedwater, but actually increases them, and to this extent increases the concentration in the boilers. However, the impurities that are left in are practically non-scale-forming materials and the efficiency of the boiler as a heat absorber is not interfered with. The treatment has done what it was designed to do—prevent scale—but actually the boiler concentrations using treated water will ordinarily be greater than with raw water.

The treatment with zeolite produces similar results, to the extent that the calcium and magnesium salts are removed and their corresponding sodium salts left in their place, with the same effect; that is, the total impurities in the feedwater are increased rather than diminished, even though the water itself has what is called "zero hardness."

Ways of Determining Concentration

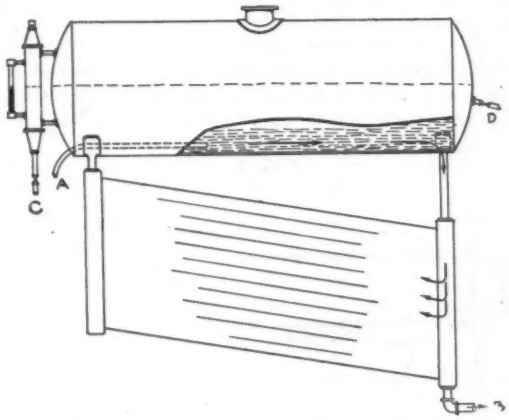
There are several ways of determining the concentration in a boiler. The first two are based on obtaining from the boilers a sample of sufficient amount. This sample is then either analyzed chemically in the laboratory or is evaporated and the residue weighed. A third method is to mount on the boilers a resistance unit, taking a continuous sample from the boiler's circulating system, measuring its resistance to the conduction of electricity, and recording the amount of current on a delicate ammeter graduated in an arbitrary scale.

Another method of determining concentration in boiler water (and one which can be done in two minutes' time in the plant) is the measurement of the amount of sodium sulphate present by precipitating the total sulphates in a 10 cc. sample with barium chloride and finding the amount of dilution with distilled water necessary in order that a narrow intensely illuminated slot is just visible through a given thickness of liquid.

To obtain even approximately accurate results by the first two methods it is necessary to obtain an accurate sample. This is not the easy matter it may seem. This is illustrated graphically in Figs. 2-4.

In a boiler of the type shown in Fig. 2, the feed-water is introduced at *A*, and in this, as in the other cases, it is necessary to take the sample at a point where this feedwater will have been thoroughly mixed with the highly concentrated water of the boiler, and this is not as easy a matter as appears on the surface. The feedwater, due to being colder, does not immediately mix with the water in the drum, but flows backwards along the bottom of the drum down rear circulating tubes, past the blowoff and into the lower rows of boiler tubes. If a sample is taken from the blowoff (*B*) without shutting the feedwater valves for an

FIG 2



CIRCULATION OF FEED WATER IN LONGITUDINAL-DRUM BOILER

appreciable time before the sample is taken, part of the blowoff water will contain fresh feedwater, and the sample will not be a true sample. If it is taken from blowing down the water-column connection (*C*), the same thing holds true, although not to quite as great an extent, but a very marked difference will usually be found between that sample and a sample taken from point *D*, which is taken entirely from the direct current of the fresh feedwater. Of course, it is the latter sample that represents the true concentration of the boiler water.

Fig. 3 shows the feedwater in this type of boiler. Here again it passes directly by the blowoff connection. In this boiler, however, it would be perfectly practicable to obtain a sample from the gage column connection, provided this is blown out sufficiently to remove entirely the condensed steam with which it is filled.

Fig. 4 shows the usual cross-drum type. Here again the same condition is encountered; only in this case the sample from the gage-column connection will not prove to be a reliable indication of the boiler concentration, and about the only place to take a true sample would be at some such point as that marked *H*.

These sketches show why the usual samples taken from the boiler blowdown sometimes give such widely varying results; for this, in nine cases out of ten, is the point at which the usual samples for concentration analysis are taken.

Chance for Variation

In the type of boiler shown in Fig. 2 there is also a great chance

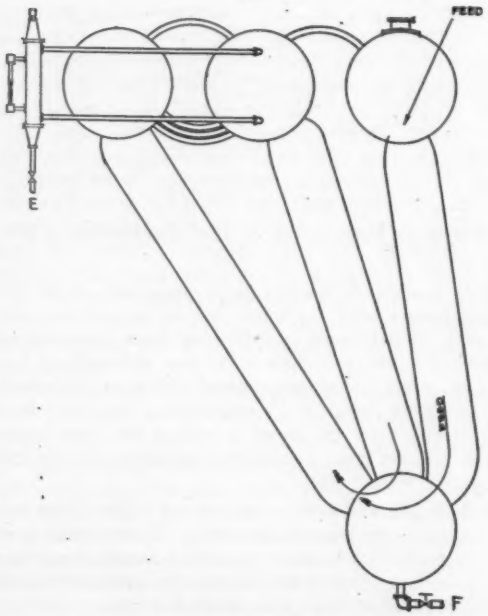
for variation of the concentration in the various drums, due probably to a lack of equalization of the feed supplied to each. In one particular case the average concentration on two drums of a four-drum boiler was only 1,020 parts per million (60 grains per gallon), while that in the other one was more than twice that, actually 2,150 parts per million, or 120 grains per gallon. In this case the samples were taken just below the water level near the front of the drums, and the figures above are the average of four days' reading taken twice a day in four different boilers in the same house.

In using the resistance apparatus, to determine concentration, it must be remembered that the results are only comparative, and that the readings will change with the chance in the relative proportion of the various elements in the feedwater. This instrument has its place, however, and where the feedwater analysis does not change too rapidly, it can be used as a fair guide, although, even at best, this method has its objections.

Novel Use of Apparatus

I noticed at a plant in Kansas City a novel use of this apparatus, which was used for keeping track of the concentration of the condensate from the turbo-generators. These turbines exhausted into surface condensers, and the condensate was returned to the boiler house. The circulating water, however, was Missouri River water, which has a high amount of impurities, largely in suspension. At this plant they were troubled by periodic splitting of condenser tubes, which, if not caught in time, introduced a relatively large proportion of Missouri River water directly into the feedwater. The matter was so serious that they used an indicating resistance machine for determining the concentration by conductivity, and they had a man stationed watching this machine night and day. When a tube split and leakage developed, it would immediately register on the machine and the turbine was shut down. They told me that if this was not caught within fifteen minutes the boilers would be so wild that the whole plant would have to be shut down.

FIG 3

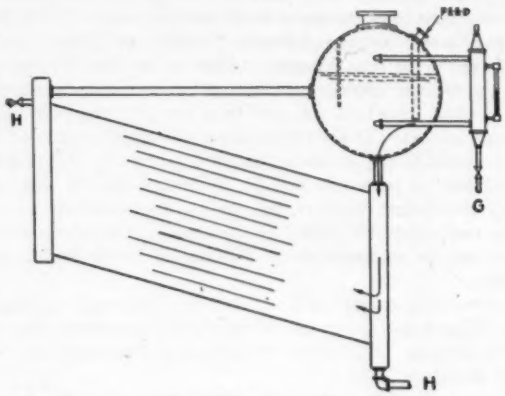


CIRCULATION OF FEED WATER IN BENT-TUBE BOILER

Advisable to Balance Totals

In checking the accuracy of concentration, it is advisable to balance up the totals. In other words, make up for the boilers, a "dirt balance" in the same way that heat balance is made up to prove the accuracy of a boiler test. In other words, after the boiler has been on the line long enough to reach the average concentration, which depends upon the amount of moisture leaving with the steam, and the amount of blowdowns, the total amount of dirt going into the boiler should equal that going out with the steam plus that going out with the blowoff. The analysis of the feedwater can be comparatively easily determined, as can also an analysis of the blowoff. Then a sample of the steam should be collected, condensed and analyzed. When this is done, if the tests have been accurately taken, the total quantity of gallons of feedwater per day, times the grains per gallon, should equal the total number of gallons of steam, times the grains per gallon, plus the total number of gallons blown down, times the number of grains per gallon in the blowoff. As Mr. Low said, this is simply a matter of arithmetic, and if it does not balance up, then the amount that it is out represents the degree of inaccuracy in the test.

FIG 4



CIRCULATION OF FEED WATER IN CROSS-DRUM BOILER

For example, assume that the test has shown there are 15 grains per gallon in the feedwater; that the concentration of the boiler is 250 grains per gallon; that there are two blowdowns of 170 gallons each per day (0.4 per cent); and the amount going out with the steam is 4 per cent. If the output of the boiler is 1,000 boiler horsepower, this means roughly 3,600 gallons per hour, or 86,500 gallons per day. The total input of the impurities into the boiler for a day therefore is 1,295,000 grains. Blown down twice a day, 170 gallons at 250 grains equals 42,500 × 2, or 85,000 grains per day in blowoff, equivalent to 340÷86,500=0.4 per cent.

There must be 1,295,000 — 85,000, or 1,210,000, in the steam, or 14 grains per gallon. If the recording calorimeter shows 2 per cent moisture average over 24 hours, the concentration of this moisture and, therefore, the concentration of the water in the top portion of the boiler must be 14 × 50, or 700.

If the calorimeter should show 4 per cent, the concentration would be 350.

Feed-water = Blow-off + Steam
86,500 X 15 = (340 X 250) + 4% X (86,500 — 340) X 350
1,295,000 = 85,000 + 1,305,000
Input 186 pounds = 12.1 pounds blowoff + 172.1 pounds in steam.

This would be considered a pretty good check, the main discrepancy being the analysis of 250 grains per gallon in the blowoff and the 350 grains per gallon shown in the moisture in the steam. This might be dilution of the blowoff with fresh feedwater, as previously pointed out, or may be inaccuracy in the calorimeter, which would be very possibly due to the large amount of moisture present, which approaches the limit of the throttling calorimeter.

"Dirt Balance" Method Gives a Fair Check

This "dirt balance" method does, however, give a fair check

upon the accuracy of the figures and should always be employed wherever possible to show up grave errors in the same manner that a modern boiler test always ends up with a heat balance.

Not only does boiler design have its effect upon the point of concentration at which foaming will take place under given conditions, because of local agitation, but also, by determining to some extent the amount of moisture which is carried out with the steam, boiler design will determine the maximum concentration which will ordinarily be carried with the usual schedule of blowing down, which is mostly done once a turn.

In other words, it is not usual for the blowdown to exceed 0.5 per cent. If the boiler were designed so that no moisture whatever were delivered with the steam it would mean that only 1/200 of the total amount of moisture entering the boiler would leave by the blowoff, provided blowdown took out average concentration. In other words, the concentration would rise to 200 times that of the feedwater. If the feedwater were 15 grains per gallon, the concentration would rise to 3,000 grains per gallon. This would ordinarily be well past the point at which a boiler would be too wild to be operated. Actually, however, this is a condition rarely even approximated and actually impossible without means for mechanically preventing the water from reaching the steam lines. The conditions in the usual boiler are that the moisture leaving with the steam varies from one-half up to 1.5 or 2 per cent, or even higher. In the best condition, say, 0.5 per cent moisture on the steam and 0.5 per cent blowdown, this equals a total of 1 per cent, or the concentration in this particular boiler with 15 grains feedwater would reach 1,500 grains, of which half would go into the steam line and half out the blowoff. If this were changed to 1.5 per cent moisture in the steam and 0.5 per cent out the blowoff, or a total of 2 per cent, the concentration in the boiler would reach 750 grains. If it were necessary to prevent priming to keep the concentration down to 300 grains—in other words, blowing down at a point of about 250 grains—it would be necessary to blow down a total of 4.5 per cent, which, plus the 1.5 per cent going out the steam line, would equal a total of 6 per cent.

The fact that a boiler is provided in a design with superheating elements would of course have no effect upon this analysis, any more than applying a superheater to the boiler externally, because the dry superheated steam would be carrying in suspension the impurities which ordinarily would be carried out with the water, and the concentration would not be affected. In such boilers, calorimeters cannot be used, and the method of checking up the "dirt balance" must depend upon condensing the steam and then determining the dirt content. This can easily be done, but care must be taken to place the sampling nozzle in such a location, and proportion the velocity through it in such a way, that a true average sample is obtained in the same manner as in sampling dust in blast furnace gas.

Throttling Calorimeters

A word here may not be out of place regarding throttling calorimeters, calling particular attention to the necessity of determining the "normal" of each instrument as provided in the A.S.M.E. Power Test Code of the American Society of Mechanical Engineers. To show the necessity of this I have here a series of tests made with exceptional care and laboratory precision on four different types of throttling calorimeters, each type tested with various sizes of orifices. These orifices varied from 3/8 inch down to 1/16 inch in diameter. Some of the calorimeters were lagged with asbestos, some steam jacketed, and some treated by both methods. The normal of these various types of sizes—in other words, the number of degrees which must be added to the lower reading to correct for the proportional effect of radiation, velocity impact, etc. —varied all the way from 1.6 up to 76 degrees F. In running a test in the field the normal should be determined both before and after the test; or, if only one normal test is taken, it should be directly after the test, for a piece of pipe scale lodging in the orifice might easily change the normal anywhere from 5 to 12 degrees.

In summing up the situation with respect to the boiler concentration, the outstanding fact is that a balance is always established between the impurities entering the boiler with the feedwater, and the sum of the impurities leaving with the blowoff and leaving in the steam. It is the last two items which determine the degree of boiler concentration. In order to reduce heat losses as much as possible the blowdown should be kept low. Needless to say, the impurities leaving with the steam must by all means be scrubbed out and kept from passing through the steam system, as they not only act as an abrasive, but also clog up steam-using apparatus, and cut the lubricating properties of cylinder oil.

Lastly, when concentrations have been measured, a check upon them should be obtained by working up a "dirt balance."

Rope Stock and Bagging

SPECIAL INQUIRY No. 36

A member desires information regarding methods of sampling shipments of old rope and bagging for moisture tests and the practice as to the percentage of tare allowed for baling. The points to be covered are:

A. *Sampling.*

How should the samples be taken when in the following forms:

1. Heavy rope in coils.
2. Light rope in coils.
3. Rope in bales.
4. Jute bagging and burlap in bales.
5. Raw Manila in bales.

B. *Air Dry weight.*

1. On what basis of moisture content is the air dry weight calculated?
2. Is there a different moisture content on domestic and foreign shipments?

C. *Tare*

1. What is the tare allowance customary for baling wire, wrapping, etc?
2. Does the tare allowance include trash and rejected material in the bales as well as the wrapping?

The inquiry will be handled under the Service to Members plan and a transcript of the replies, in blank, will be sent to all who contribute information to it.

W. G. MACNAUGHTON, Secretary.

Bogota Paper Co. Makes Improvements

[FROM OUR REGULAR CORRESPONDENT]

BOGOTA, N. J., January 4, 1926.—Many improvements are being made at the mill of Bogota Paper and Board Company. The company has just completed and put in operation 350 Electrical hp. which consists of a compound condensing engine, a 150 hp. variable speed motor for paper machine drive and a 200 hp. D. C. generator. The company has also during the year built a new 2,500,000 gallon filter plant, designed by the Norwood Engineering Company of Florence, Mass. Also three new beating engines built by Downington Manufacturing Company, and one new electric driven Majestic jordan built by E. D. Jones Sons Company.

The company is now putting a new roof on the machine room which will be raised eight feet higher to accommodate the installation of twenty new dryers, consisting of all new four deck frames for the entire section of one hundred and five dryers. The company is also putting in a new stack of calenders, new slitter reels and winders. All of the paper machinery is being furnished by Beloit Iron Works, of Beloit, Wis.

These improvements will all be completed in about sixty days and will increase the capacity of the mill from its present capacity of seventy tons to ninety tons per day.

Beating Tester*

Schopper-Riegler System Patented

We cannot emphasize too strongly the importance to the paper manufacturer of the great and indispensable necessity of carefully scrutinizing the condition of the pulp which has passed through the beating process.

Variable Results

Before the invention known as "beating tester" was introduced to the paper manufacturer, he was compelled, and at no small cost, to employ the services of a skilled operator to beat pulp properly, for upon his individual skill and judgment depended the success or failure of future results. The terms "coarse" and "greasy" are relative terms, and the sole opinion of the operator has determined this point. From this, it must be evident to all, variable results have followed, each operator having his own opinion on these matters

Standardized Results

The beating tester, however, entirely dispenses with this long and laborious task, and not only accomplishes this all important work in an appreciably short period of time, but *has standardized its results.* For example: Pulp subjected to the tester registers a certain number, thus classifying the various conditions of pulp.

In this way, all possible loss by error of judgment on the part of the operator is obviated, and in addition to this, a uniform output in the quality of papers manufactured can be guaranteed and depended on.

How the Apparatus Operates

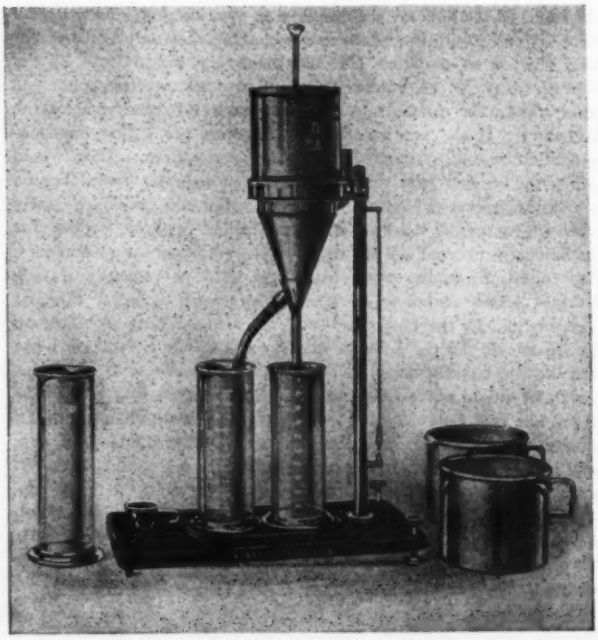
The apparatus consists of a receiver with a conical valve. A sieve of a certain mesh and area forms the bottom of the receiver. Below the receiver is the separating funnel, which is provided with a small and large aperture for the discharge of the water.

Thereby the apparatus automatically produces the separation of water flowing off quickly or slowly, according to the condition of the fibers. The speed with which the water escapes is extraordinarily characteristic of the fineness of the fibers.

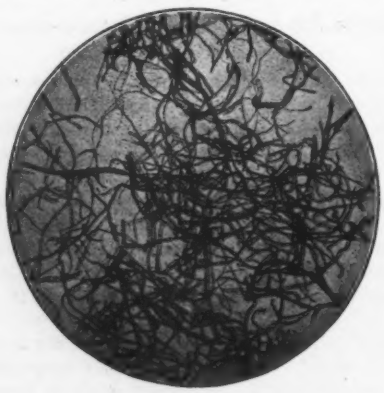
The water is gathered in measuring classes.

The quantity of water which flows through the one or other outlet depends upon the beating degree of the pulp. In the case of coarse pulp the water flows off quickly, and goes principally into the left glass, whereas in the case of greasy stuff the water drains more slowly or quite slow and gathers principally in the right hand glass.

Considering both extremes, we find that a thoroughly permeable, that is to say, a very coarse pulp, lets the water through quickly, and that as much as possible an impermeable, that is to say, a high grade greasy pulp allows no water to drain, and furthermore, if we mark the beating condition of the first mentioned pulp 0, and the beating condition of the other pulp 100, we are able to express the beating degree of any pulp by a figure ranging between 0 and 100. The proper figure is obtained by deducting the number of cubic centimeters from 1,000, and dividing the remainder by 10. The figure thus obtained indicates the percentage of water drained quickly.



SCHOPPER-RIEGLER BEATING TESTER



COARSE PULP

GREASY PULP

To save time in calculating, the measuring glasses are provided with special numbering, showing at a glance the beating degree. The two illustrations representing coarse and greasy pulp distinctly show the difference between these fibers, the coarse stuff being beating degree 38, and the greasy one 90.

* Distributed by Foreign Paper Mills, Inc., 72 Duane St., New York.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Paper Making Industry

CLARENCE J. WEST, CHAIRMAN

Sulphite Process

Utilization of Decayed Wood for Sulphite Pulp. C. G. Schwalbe. Papierfabr. 23, 429-431 (July 5, 1925). An experimental investigation of the use of sound and decayed European spruce wood for pulp manufacture showed that (1) a slight decay is not disadvantageous but wood with a marked diminution in physical strength yielded pulp of inferior quality; (2) the sulphur dioxide consumption is high with decayed wood, the yields lower, bleach consumption higher and the losses greater; and (3) the results agree in general with data on Canadian woods furnished by Rue, Miller and Humphrey [cf. C.A. 18, 1051 (1924)].—J. L. P.

Manufacture of Sulphite Pulp With Fresh Liquors Containing Magnesia. C. G. Schwalbe. Papierfabr. 23, 416-466 (July 19, 1925). Magnesium hydroxide, from magnesium chloride and calcium hydroxide, is converted to magnesium bisulphite by the tower absorption system. It is not as readily oxidized as calcium bisulphite. At 150° C., 50% calcium sulphite precipitates from the bisulphite liquor, but only 10% separates from a mixture of calcium and magnesium bisulphites. Cooking experiments have demonstrated that with an all calcium liquor 44% separates as the sulphate and is precipitated on the fibers, with a mixed liquor 22% precipitates, and with a liquor consisting entirely of the magnesium compound 0.4% is precipitated. Magnesia-containing liquors require 1 to 2 hr. longer cooking time and yield waste liquors containing 0.5 to 0.9% sulphur dioxide. The sulphur dioxide consumption, per 100 parts wood, is 16 g. with calcium liquors, 15 g. with magnesium-calcium liquors, 13 g. with magnesium liquors and 16 g. with a liquor high in magnesia content. The yields were about 44%, except with a strong magnesium liquor when the value was 52%. The copper number of the pulps was 2.3 to 2.8; the baryta resistance was 84%. The pentosan content with the magnesium cook was 6.3%, and with the calcium cook 4.6%. The lignin content varied from 1.2 to 2.3%. The pulp strength increased with the magnesium content of the cooking acid.—J. L. P.

Heat Relations in the Sulphite Cooking Process. R. Sieber. Wochbl. Papierfabr. 56, 729-732 (June 13); 793-795 (June 27); 848-851 (July 11, 1925). Part of a series of articles on heat relations in the sulphite digestion process. The utilization of heat from waste liquors and from the steam condensate in the indirect process is discussed. The heat balance of the entire process, for both direct and indirect methods, is summarized.—J. L. P.

Reddening of Sulphite Pulp. E. Haegglund and E. O. Hedman. Zellstoff U. Papier, 5, 258-260 (July 1925). Based on a series of digestion experiments with wood, pure chemicals, and distilled water, and analyses of the pulps so produced, the following conclusions are drawn concerning the reddening of sulphite pulps: (1) the color intensity increases proportionately with the residual lignin content, is independent of the cooking acid composition and of the presence of ether, acetone, and benzol soluble constituents of the wood; (2) the red color is due to a lignosulphonic acid-carbohydrate combination in the pulp, hydrolysis of which destroys the color more or less completely and the lignosulphonic acid is rendered soluble; (3) addition of a neutral sulphite to lignin yields no coloration on oxidation, but together with an acid, as 0.25% sulphuric, hydrochloric, or sulphurous acid, a red color is produced on oxidation with hydrogen peroxide. It is probable that the red color is the result of a quinoid rearrangement of the lignin molecule by oxidation.—J. L. P.

Utilization of Waste Sulphite Liquor in the Manufacture of Printing Ink. F. Croner. Zellstoff U. Papier 5, 224 (June 1925). Neutralized waste sulphite liquor is used as a binder, with the addition of hygroscopic substances, in the manufacture of printing inks.—J. L. P.

Use of Sulphite Waste Liquor in the Manufacture of Building Blocks. R. W. Strehlenert. U. S. pat. 1,501,975, July 22, 1924. Building blocks or "stones" are formed by mixing clay, wood cuttings and sulphite waste liquor with such a small amount of water that the mass will be of granular consistency, moulding under pressure and rapidly heating the material for a short time to about 200° C. or above partially to decompose the sulphite waste liquor and render the product hard and non-hygroscopic.—A. P.-C.

Emulsifying Bitumen With Sulphite Waste Liquor. L. Kirschbraun. Can. pat. 249,469 (Mar. 10, 1925). An emulsion consists of sulphite waste liquor, an earthly collodial material and bitumen, the bitumen being in the dispersed phase.—A. P.-C.

Pickling Ferrous Metals With Sulphite Waste Liquor. A. F. Hoffman and W. M. Parkin. U. S. pat. 1,524,435 (Jan. 27, 1925). Articles of iron or steel are treated with "acid-concentrated" sulphite waste liquor, which may be prepared by filtering, concentrating to 30° to 32° Be. in vacuo, and subsequently mixed with water and sulphuric or hydrochloric acid.—A. P.-C.

Process of Making Wood Pulp. G. A. Richter assignor to Brown Co. U. S. pat. 1,545,522, July 14, 1925. The process comprises the following steps: digesting raw cellulosic material in an acid sodium-compound cooking liquor; separating, neutralizing and concentrating the spent acid liquor, and smelting and recovering in an alkaline solution the sodium components thereof; carbonating the alkaline liquor for the conversion of certain sodium compounds thereof to sodium carbonate; digesting the pulp resulting from the acid digestion in the alkaline liquor obtained; and acidifying the spent alkaline liquor with sulphur dioxide to produce an acid cooking liquor for the repetition of the first-mentioned step.—A. P.-C.

Behavior of Calcium and Magnesium Bisulphite Liquors on Heating Under Pressure. C. G. Schwalbe and Kurt Berndt. Wochbl. Papierfabr. 56, 675-676 (May 30, 1925). A reply to Wenzl (Ibid. 56, 256-259). The magnesium bisulphite-sulphite equilibrium compared with that of the corresponding calcium salts shows a greater tendency to form the magnesium bisulphite compound. The hydrolysis of magnesium chloride solutions, even as concentrated as 25 per cent, is practically nil when heated to 102 to 183° C. It has not been shown that the hydrolysis occurs to a greater extent in the presence of fibers.—J. L. P.

Absorption Systems. Otto Heijne. Pulp & Paper 23, 551-553 (May 21, 1925). A comparison of the tower and milk of lime systems for the preparation of sulphite liquor, from which the author considers that the latter is superior to the former, especially from the standpoint of the quality of the pulp. This is attributed to the possibility of making a high magnesium liquor, which cannot be made in towers.—A. P.-C.

Sulphite Acid Fortifying Tower. R. B. Wolf. U. S. pat.

1,499,898, July 1, 1924. The tower is subdivided into a number of compartments so connected that the liquor can flow downwards successively through the different compartments, while the gases pass upwardly and are brought into intimate contact with the liquid. The liquor to be fortified can be fed into any one of the compartments; and the outlet at the bottom of the tower is so designed that a head can be maintained in it equal to the total head in the tower against which the gases must be introduced. In order to still further strengthen the acid, all or part of the liquor discharge from the bottom can be recirculated by introducing it with the gases, thereby effecting very intimate contact with the latter.—A. P.-C.

Heat Relations in the Sulphite Process. Rudolf Sieber. Wochbl. Papierfabr. 56, 517-520 (Apr. 25); 579-584 (May 9, 1925). Part of a series of articles on the heat relations in the sulphite process. The utilization of waste heat from the digestion process is comprehensively discussed.—J. L. P.

Action of Aqueous Sulphurous Acid on Lignocellulose. II. C. F. Cross and A. Engelstad. J. Soc. Chem. Ind. 44, 267T-270T (June 5, 1925). Results of comparative cooks with aqueous sulphurous acid containing 0.25% of ammonia (NH_3) and equivalent proportions of lime and soda clearly show that ammonia has a specific action and function in resolving the lignocellulose into a pure exceptionally light colored cellulose containing a small proportion of residual lignin, while the waste liquor is also exceptionally free from discoloration. Working on a commercial scale with an 8% free SO_2 liquor containing 0.36% of ammonia, the temperature was brought to 110° C. in 5 hr. and kept there, the pressure being kept constant at 6 atmospheres. Easy-bleaching pulp is obtained with 20 hr. further digestion, and strong unbleachable pulp with 8 hr. digestion. Less screenings are produced than by the regular sulphite process, and the white water from the deckers is practically free from fibers, from which it is inferred that the length of fiber is conserved. More care has to be exercised in bleaching the new pulp to avoid oxidation effects (oxycellulose). On a laboratory scale yields with addition of 0.1 to 0.5% ammonia were 50 to 55.0%.—A. P.-C.

Pretreatment of Wood for the Sulphite Cooking Process. C. G. Schwalbe. Ger. pat. 410,762. Papierfabr. 23, 275-276 (Apr. 19); Wochbl. Papierfabr. 56, 594-595 (May 9, 1925). Wood, before being cooked by the sulphite pulp process, is given a treatment with cooking acid at a temperature below 120° C. The wood is impregnated with the liquor until an equilibrium is established and there is no further change in the composition of the solution.—J. L. P.

Process of Manufacturing Sulphite Pulp. Köln-Rottweil Akt.-Ges. and Erich Opfermann. Ger. pat. 411,034. Papierfabr. 23, 363-364 (May 31, 1925). The incrustations of easy bleaching sulphite pulp are removed by a further digestion in fresh calcium or magnesium bisulphite liquors, or mixtures of the same. This operation is carried out in a separate digester.—J. L. P.

Sulphite Digester Strainer. C. Jentz. U. S. pat. 1.517,839, Dec. 2, 1924. The strainer for the gas relief consists of a perforated pipe extending across the neck of the digester immediately below the cover. The pipe is supported on brackets bolted to the interior of the digester neck. The pipe is divided midway by an imperforate partition which thus forms two distinct straining chambers, the end walls of the tube being closed. On each half of the perforated pipe is an upstanding nipple adapted to receive a depending outlet tube supported on, and extending through the cover. Each outlet tube is connected to a common discharge pipe and is provided with a valve. When one of the ends of the strainer pipe becomes clogged with fibers, its valve is closed and the other one opened, thereby giving a chance to the clogged end to free itself, while the other end is in operation.—A. P.-C.

Control in the Pulp Industry. R. Dieckmann. Papierfabr. 23, 317-320 (May 17); 333-336 (May 24); 353-357 (May 31, 1925). A lecture given at the pulp and paper course of instruction in Berlin, Apr. 20-26. Modern chemical control in the sulphite pulp industry is described.—J. L. P.

Digester Linings of Past and Present. O. Heijne. Paper Trade J. 80, No. 23, 61-62 (June 4, 1925). Outline of the development of digester linings from the beginning of the sulphite process to the present day, with a brief discussion of the requirements of an ideal lining.—A. P.-C.

Review of Recent Domestic and Foreign Patent Literature Concerning the Utilization and Development of Waste Liquors and Gases in the Pulp Industry, 1912-1925. A. Schrohe. Papierfabr. 23, 30-33 (Jan. 18); 63-65 (Feb. 1); 89-92 (Feb. 15); 158-161 (Mar. 8); 251-253 (Apr. 12); 284-287 (Apr. 26); 293-296 (May 3); 306-307 (May 10, 1925). Brief abstracts of recent domestic and foreign patents on the utilization and development of waste liquors and gases in the pulp industry, 1912 to 1925.—J. L. P.

Sulphite Waste Liquor Treatment. C. G. Schwalbe. Eng. pat. 224,509, Nov. 6, 1923. The waste liquor is mixed with salts such as magnesium, calcium and sodium chlorides and heated to 150° to 200° C. under a pressure of 5 to 8 atmospheres. Acetic acid, methanol and sulphur dioxide are recovered and carbon resulting from the process is rendered filterable by addition of wood waste, shavings, sawdust or bark to the initial mixture. The solution of salts may be returned to the process and the carbonaceous material may be dried and used for fuel. —A. P.-C.

Waste Problem at Newsprint Mills. V. P. Edwards. Paper Trade J. 80, No. 24, 58-60 (June 11, 1925); Paper Mill 49, No. 23, 16, 18, 55-56 (June 6, 1925); Paper Ind. 7, 451,455 (June 1925). A discussion of the necessity and advisability of solving the waste sulphite liquor disposal problem and the problem of fiber recovery in pulp and paper mills.—A. P.-C.

Fermentation of Sulphite Waste Liquors. Erik Haegglund. Paper Trade J. 80, No. 26, 43-45 (June 25, 1925). When the liquor is merely neutralized with lime and calcium carbonate, the highest alcohol yield was obtained with an acidity of approximately 6% in the waste liquor. When the waste liquor was treated with excess of hydrochloric at 90° C., before neutralizing, the maximum alcohol yield was approximately 17% higher than in the first case and was obtained with an acidity of 5.5% in the waste liquor.—A. P.-C.

Mechanical Process

Built-Up Wood Grinder. O. W. Greene assignor to International Pulp Stone Co. U. S. pat. 1,518,422, Dec. 9, 1924. The grinder stone is built up of two or more disks or sections of stone, secured together to form a single grinder stone of suitable size. Adjacent faces of the sections are parallel and inclined at about 8% to the plane normal to the shaft. The sections are held together by means of bolts passing through all the sections and parallel to the shaft, the holes through which the bolts pass being enlarged at the ends so that the nuts will lie within them and will not project beyond the sides of the stone. The inner, or central, portion of the contiguous faces of the sections are cut away, providing a wider space which is filled with a suitable cement, as are also the bolt holes after the stone has been assembled. It is claimed that the cement between the faces of the sections at the circumference of the stone will remain flush with the stone sections as they wear down, regardless of whether or not the cement is harder or softer than the stone.—A. P.-C.

Groundwood Pulp. Adolph F. Meyer. Paper Mill 49, No. 25, 10, 40 (June 20, 1925); Paper Ind. 7, 427, 429 (June 1925). A discussion of power consumption in grinding wood, showing the necessity for and advantages of a speed regulator for

water-wheel-driven grinders and of a load regulator for electric motor-driven grinders.—A. P.-C.

Continuous-Screw-Feed Magazine. M. H. Jones, assignor to Port Arthur Shipbuilding Co. U. S. pat. 1,518,583, Dec. 8, 1924. The magazine is of rectangular cross section, and is provided with pairs of opposed channel irons forming two or more vertical spaced pockets at each side of the magazine. In each pocket is a feed screw which practically fills the pocket, the threads of the screw projecting through the open inner side of the pocket into the main portion of the magazine, thereby pressing on the upper faces of the logs in the magazine and forcing them down firmly against the surface of the stone. The screws are rotated in synchronism by any suitable mechanism, either in pairs or in series.—A. P.-C.

Method of and Apparatus for Controlling the Pulp in the Pit of a Wood Grinder. J. J. Warren. U. S. pat. 1,505,758, Aug. 19, 1925. In order to prevent the pulp from forming in masses in the pit when grinding at a relatively high temperature and with little spray water, an agitator is provided in the pit so as to keep the stock as nearly as possible at a uniform consistency. The agitator consists of an endless belt or band of substantially the same width as the pit, made up of a series of straps to which are secured a series of transverse bars or cleats, the whole passing about two series of rollers, one of which is suitably rotated, preferably from the grinder shaft. The agitator moves the mass of pulp towards the discharge of the pit and keeps it of uniform consistency even when the pulp is too thick to flow readily itself. The water spray is directed against a flash-board and does not come in direct contact with the hot stone.—A. P.-C.

Combined Wood Grinder and Pulp Mixer. W. H. Savery. U. S. pat. 1,525,050, Feb. 3, 1925. The invention consists essentially in providing an ordinary pocket grinder with a suitable number of auxiliary pockets for the pulp (sulphite, soda, kraft, waste paper stock, etc.) which is to be mixed with the groundwood for making into paper. The fibrous materials are thus mixed right at the grinder. Water or steam sprays are provided for softening the material if necesary. Beaters and mixers are entirely eliminated. Provision is made for adding color if required. The apparatus is suitable for the manufacture of unsized paper and boards.—A. P.-C.

Wood Grinder for the Manufacture of Groundwood. Akt. Karlstads Mekaniska Verkstad. Ger. pat. 413,214. Papierfabr. 23, 440 (July 5, 1925). A pressure magazine wood grinder is described.—J. L. P.

Hot Grinding With the Hydraulic Multiple Press and the Voith Continuous Grinder. Teicher. Zellstoff U. Papier 5, 215-216 (June 1925). A reply to criticisms by Klein, and Klimpke (Ibid. 5, 45).—J. L. P.

An Important Development in the Worsted Disintegrator for Fibrous Materials. F. Hoyer. Papierfabr. 23, 159-164 (June 18, 1925). The Wurster disintegrator for fibrous materials is described and particularly Ger. pat. 403,822, which is concerned with recent developments on this machine as manufactured by Orenbach and Vogel.—J. L. P.

Method of Feeding Wood to the Stone in Magazine Grinders. J. M. Voith Co. Fr. pat. 588,581, Nov. 6, 1924. The wood is forced against the stone by means of large toothed wheels which project into the magazine towards the bottom.—A. P.-C.

Continuous Grinding. J. F. Heaney. Paper Trade J. 81, No. 1, 60-64 (July 2, 1925). A discussion of the advantages of continuous grinding and of the Voith caterpillar grinder, giving data from actual mill practice in both Europe and America, together with a description of the caterpillar grinder of today (more particularly of the ones installed and to be installed at the Price Bros. mills) and the way they have to be installed in modern pulp mills.—A. P.-C.

Mechanical Pulp From Resinous Woods. A. W. Schorger to C. F. Burgess Laboratories. U. S. pat. 1,539,433 (May 26, 1925). Resinous wood is ground in the bolt in the presence of an aqueous solution of caustic soda or other agent having a solvent and emulsifying action on resin. The pulp formed is pressed and washed and the wash water is delivered to the grinder for action on fresh pulp.—A. P.-C.

Grinding Wood Pulp. J. J. Warren. Eng. pat. 234,190. This improved grinder, which is of the magazine type, has a continuous and positive feed. This is attained by providing opposing and continuously operating wood gripping feeding means which act substantially along the entire length of the sides of the magazine, which if extended would intersect the cutting face of the stone and operate up to a point so closely adjacent to the grindstone that no counterarching or jamming of the wood can occur.—A. P.-C.

Paper From Straw. E. Markoczi, S. J. Adam, F. R. Wiesner and H. Mechwart. Ger. pat. 413,318. Zellstoff U. Papier 5, 220 (June 1925). A mechanical disintegrator for straw, etc., is described.—J. L. P.

Production Costs for White Groundwood. S. Schaal. Zellstoff U. Papier 5, 204-208 (June 1925). A reprint from "Die Holzschleiferei," which is a section of the recent third edition of Carl Hofmann's Praktischem Handbuch der Papierfabrikation, edited by Dr. Teicher.—J. L. P.

Removal of Water From Groundwood. K. Malinowski. Bum. Prom. No. 3; Zellstoff U. Papier 5, 256-258 (July 1925). A discussion with practical suggestions concerning the economical operation of stock thickeners for groundwood.—J. L. P.

Method of Feeding Wood in Continuous Wood Grinders. G. Nenzel. U. S. pat. 1,541,521, (June 9, 1925). The wood is fed down the magazine into contact with the stone by means of stationary rotating screws which project partially into the magazine at its front and back walls and which have opposite pitches and rotate in opposite directions. (This is apparently the same as M. H. Jones' U. S. pat. 1,518,583, Dec. 8, 1924.—Abs.)—A. P.-C.

Alkaline Processes

Titration of Sulphate Pulp Liquors. L. Gunkel. Papierfabr. 23, 277-279 (Apr. 26, 1925). Experiments on a solution containing known amounts of sodium hydroxide, carbonate, sulphide, silicate, sulphite, thiosulphate, and sulphate demonstrate that the total alkali in sulphate pulp liquors can be correctly determined by titration with 1 normal hydrochloric acid, using methyl orange as an indicator. The effective alkali can be ascertained by a similar titration after adding barium chloride and filtration. The iodine consuming constituents of sulphate liquor, however, are continually changing in composition: after 2 days the iodine titer was about 6% less, and after a month comparative figures could not be obtained.—J. L. P.

Production of Pulp. Linn Bradley and E. P. McKeefe. Can. pat. 246,302, Jan. 27, 1925. A solution containing a sulphate of an alkali is treated with calcium carbonate or slaked lime in presence of uncombined sulphur dioxide. To the effluent liquor of an acid process, sodium sulphate or bisulphate is added, organic matter is removed by concentrating, the resulting liquor is treated with calcium sulphite in the presence of an acid or with other alkaline-earth compound in the presence of sulphur dioxide to precipitate calcium sulphate and produce alkali sulphate or bisulphate in the solution.—A. P.-C.

Manufacture of Pulp from Wood and Similar Substances. Richard Wolffenstein. Ger. pat. 410,824. Papierfabr. 23, 363 (May 31, 1925). Wood, etc., is treated with a sodium hydroxide solution containing a small amount of either an aluminum or a zinc compound.—J. L. P.

Apparatus for Cooking Pulpmaking Materials. T. B. Munroe assignor to C. F. Dahlberg. U. S. pat. 1,503,549, Aug. 5, 1924. The patent covers an apparatus for the continuous pulping of materials such as bagasse, with weak caustic soda solutions at

atmospheric pressure. The material is delivered into a tank containing a 2 to 10% solution of caustic soda, from which it passes over a cylinder mold into the cooking drum which is filled with water. The cylinder mold allows most of the caustic solution to drain away, but leaves a certain amount of it in the material, which is thus cooked in presence of a small proportion of caustic and thereby softened without being disintegrated. Cooking is carried out by external heating of the chambers, consisting of long cylindrical drums, the material travelling through at such a rate that it is completely cooked when it is discharged into the washing chambers. The various parts of the apparatus are provided with agitators to prevent the fibrous material from settling to the bottom. The various cooking and washing compartments are piped in such a manner as to ensure conservation of the cooking liquor insofar as it is possible.—A. P.-C.

Steam Consumption in Sulphate Pulp Manufacture. A. Klein. Zellstoff U. Papier 5, 170 (May 1925). A comparison is made between the Swedish process known as the S-S-system and the disk evaporator process. The latter requires over one and a half as much steam as the former but is more certain to yield the results desired.—J. L. P.

De Vains Straw Pulp. W. Herzberg. Wochbl. Papierfabr. 56, 555 (May 2, 1925). The approximate composition of the paper used for the London **Morning Post** of Mar. 18, 1925, presumably composed of straw pulp manufactured by the DeVains process, is 50% groundwood, 35% straw pulp, and 15% chemical wood pulp.—J. L. P.

De Vains Process. W. Schacht. Wochbl. Papierfabr. 56, 550-555 (May 2, 1925). A polemical discussion of the merits of the process in the manufacture of pulp. Straw, owing to its fineness of structure, is not likely to replace wood in the manufacture of paper. The production and utilization of straw for paper purposes are discussed from an economic standpoint.—J. L. P.

Treatment of Black Liquor. L. Bradley and E. P. McKeefe. Can. Pat. 245,831, Jan. 6, 1925. Black liquor to which a precipitated aluminum compound has been added is treated with carbon dioxide to precipitate alumina in intimate admixture with organic matter, the precipitate is subjected to destructive distillation to give an intimate mixture of carbon and alumina with a liquor which may be concentrated and causticized with lime to produce caustic alkali solution for further use.—A. P.-C.

Fertilizer Value of Lime Sludge from Sulphate Pulp Manufacture. A. Klein. Zellstoff U. Papier 5, 170-171 (May 1925). It is advantageous to use lime sludge from the sulphate pulp mill as a fertilizer on land poor in calcium. The composition of the dry material from four mills was 69 to 90% $CaCO_3$, 2 to 11% $Ca(OH)_2$, 0.03 to 1.67% $CaSO_4$, O.76% CaS_2O_3, 0.13 to 0.70% NaOH, and silicates, clay, sand, etc., 7.52 to 21.26%. The moisture content was 18 to 42% and the specific gravity 1.1 to 1.5.—J. L. P.

Recovery of Caustic Soda from Esparto and Wood Pulp Boiling Liquors. Paper Makers' Mo. J. 63, 213-215 (June 15, 1925). The process consists essentially in burning continuously and directly the solid residue obtained by evaporation of the black liquor, in a small type of "Underfeed Type C" travelling grate stoker, instead of the present highly unsatisfactory practice of allowing the material to smolder while spread out over a wide area of floor. The stoker consists essentially of a laminated steel belt, the links being thin, flat segments of steel, only a quarter of an inch wide, so that the fuel in a fine state of division cannot fall between. It is driven by means of fluted front and back drums, the former of which is driven from a suitable source of power. The laminated steel belt hangs loose underneath, and travels in water which not only cools the links but at the same time acts as a perfect seal for the air, supplied from a series of compartments at each side of the grate, and also as a means of quenching the ash at the end.—A. P.-C.

Acid Vapors from the Evaporation of Black Liquor. E. Oeman. Svensk Pappers Tid. Nos. 1 and 2; Papierfabr. 23, 365-369 (June 7, 1925). The vapors, as well as the condensate, resulting from the distillation of strongly alkaline black liquor from the soda pulp process are acidic. By means of the electrolytic dissociation theory and ionic equilibria the possibility of the appearance of a weak, undissociated acid, such as acetic, is not explained. Other acids with lower dissociation contents increase the amount in the condensate. The acid concentration in the latter increases with rising temperature, decreasing hydroxide concentration, and increasing concentration of the anions concerned. The distillation factors of the volatile acids effect in large measure the acidity of the condensate. Data on the distillation of solutions of sodium acetate, with and without the addition of sodium hydroxide, furnish evidence for the theory. In the distillation of black liquor the first condensate is alkaline and the following ones increase in acidity, varying from pH 7.7 to 5.8. Black liquor saturated with carbon dioxide yielded a distillate with pH 6.4 to 4.5. The alkalinity of black liquor, properly diluted, is determined volumetrically with 0.1 normal hydrochloric acid, the indicator thymolphthalein probably giving the more correct results. A colorimetric procedure, employing black liquor at different dilutions, is described. The use of indicator paper is not recommended, owing to possibility of error due to the adsorbing of salts by the paper.—J. L. P.

Cellulose from Vegetable Fibers by Chlorination. P. Waentig and R. Ziegenbalg. U. S. pat. 1,540,968, June 9, 1925. Disintegrated wood or other vegetable fibrous material is mixed with half its weight of water acidified at ordinary temperature, allowed to stand, and then cooled and treated with chlorine.—A. P.-C.

Water and Waste Water of the Paper Industry. A. S. M. Klein. Paper Ind. 7, 584-585 (July 1925). Comparison of American and European statistics on water consumption and fiber losses in pulp and paper making.—A. P.-C.

Treating Soda Black Liquors. L. J. B. A. Colas. U. S. pat. 1,538,269 (May 19, 1925). Calcium acetate, oxalic acid, or other flocculating agent is added to black liquor to coagulate the fine particles which it contains. These particles and larger particles are separated, and the residual liquid is treated with lime or other base to separate the remaining fine particles and a portion of the substance in solution.—A. P.-C.

Acetone from Black Liquor. N. Statham. U. S. pat. 1,539,966, June 2, 1925. Black liquor is concentrated and combined with additional caustic soda and then with large quantities of caustic lime to form a substantially solid, high-lime causticized organic acetate material. This material is subjected to dry distillation and calcination, caustic soda liquor is leached from the calcined residue, and used for addition to liquor from the digesters.—A. P.-C.

Rapids des Chats To Be Leased

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 6, 1926—The Quebec Government rights in the water power known under the name of Rapids des Chats, on the Ottawa River, in the Township of Onslow, County of Pontiac, will be offered for lease at a public auction on February 13, 1926, at 10 a. m. The water power is the same which was leased some time ago, but which was abandoned by the parties who obtained the rights to develop the rapids. It is, therefore, again put up for auction. Interested parties shall be under the obligation to deposit a sum of $10,000, which shall be forfeited if such party put up no bidding. It shall be refunded to unsuccessful bidders.

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

Affiliated with

THE AMERICAN PAPER AND PULP ASSOCIATION

Conducted by THOS. J. BURKE, C.A., Sec-Treas

Tax Simplification

By T. J. Burke, C. A., Associate of the American Institute of Accountants.

A startling picture of the inconveniences, uncertainties and delays to which taxpayers have been subjected in the administration of the federal tax laws is drawn by the committee on public affairs of the American Institute of Accountants in a letter-bulletin on "Tax Simplification" received by local accountants, bankers and business men. The letter-bulletin is being circulated as a public service to taxpayers and to the government, in an effort to bring about an improvement in procedure. It recommends changes that should help, it says, to make the yearly tax contact of the individual or firm less of an ordeal and more of a business transaction.

Hope for Expeditious Handling

The practising public accountants of the country, represented by the Institute, hope that the making of tax returns and the payment of taxes may become an affair which can be handled expeditiously and precisely, and which can be closed definitely within the required time. William H. West, of New York, is president of the institute. Homer S. Pace, of New York, heads the committee on public affairs which had in charge the preparation of the letter-bulletin.

The burden which can be effectively relieved at this time, according to the letter-bulletin, and to which the institute has directed its attention, among other items, is that caused by inadequate and clumsy procedure in tax administration.

"Many inequities arise under the present law and regulations," says the letter-bulletin, "and many procedures are cumbersome and impose an undue burden upon the taxpaying public. In thousands of cases, the Commissioner of Internal Revenue has made additional assessments which have been annulled by the Commissioner himself or reversed by the Board of Tax Appeals after long and expensive contests on behalf of the taxpayers. These annulments and reversals of assessments have been obtained at a cost to taxpayers that assumes great proportions—a cost that has materially added in many cases to the legal amount of tax which the taxpayer has paid.

Improvement may come in part by the revision of the federal revenue act—a work that is now in progress. It may come in part by an improvement in procedure in the Bureau of Internal Revenue in the administration of the law, and it should come in part by voluntary action on the part of corporations and others in taking proper care to prepare returns on a verified basis of accounts and in accordance with the law and regulations. It will come, moreover, from the continuance of the Board of Tax Appeals on its present basis, subject to an increase of its jurisdiction to cover all tax matters, including refunds.

The Institute takes to itself credit for being the first to advocate the creation of a Board of Tax Appeals, in 1919, when an act for the creation of such a board, independent of the Treasury Department, was drafted and handed to Warren G. Harding, then Senator from Ohio, who referred it to Boise Penrose, Senator from Pennsylvania. Mr. Penrose took it home, saying that he wanted to think it over, but death intervened before he found time to review the proposed act. The Institute then requested the Chamber of Commerce of the United States to endorse the proposal to create by law a Board of Tax Appeals to be independent of the Treasury Department, and in 1921 and in 1923 the Chamber of Commerce of the United States went on record to that effect. When the 1924 Revenue Act was being drafted, a representative of the Institute appeared before the Committee on Ways and Means of the House of Representives and advocated the creation of such a board. It was included in the 1924 Act.

The work performed by the board is regarded by the practising public accountants of the country as very satisfactory. They recommend the retention of the board in its present form with increased jurisdiction, but oppose its transformation into a court on the ground that no additional court is needed, but that the business man does wish a tribunal with relatively simple procedure to which he can go to obtain prompt relief from what he believes to be unjust levies of taxes.

Statements are included by Andrew W. Mellon, Secretary of the Treasury, by George O. May, of New York, one of the prominent members of the accountancy profession in this country; by J. G. Korner, Jr., chairman of the United States Board of Tax appeals; by Arthur A. Ballantine, of New York, formerly solicitor of the Bureau of Internal Revenue, and by Edward E. Gore, of Chicago, chairman of the Institute's special committee on taxation.

Note.—Copies of the letter-bulletin mentioned in the above article have been forwarded to members of the Cost Association. Others may obtain copies by forwarding requests to the Cost Association, 18 East Forty-first street, New York City.

Italian Paper Mills Normally Busy

[FROM OUR REGULAR CORRESPONDENT]

Washington, D. C., December 30, 1925.—The organ of the Italian Paper Manufacturers' Association reports that paper production has continued normal during the past two or three months. Prices have remained fairly stable, both for raw materials and the finished product. **Some slight price reductions** have been registered in the finer qualities of paper, but the general market tendency is firm, and no further cut in prices is anticipated.

Distributing the Overhead*

By Nelson K. Bowne, De Laval Separator Co., Poughkeepsie, N. Y.

After the proper Accumulation of the Overhead, the chief problem is to ascertain the amount to be added to the prime cost of each product. This amount should represent a fair charge for the portion of the factory facilities employed in manufacturing the particular item, keeping in mind the expense entailed in making the distribution. It is manifestly impractical, if not impossible, to analyze each overhead item with respect to its exact relation to each manufactured product; but it is possible to analyze it for certain groups of products. This may be done sufficiently to formulate rules by which practical approximations may be made as to the share of expense to be borne by each group, or item of product.

Although Mr. Bristol in his paper presented before the New York Chapter, carried the cost procedure to the point where all charges were accumulated in the individual departments, I am going to back track a bit and cover briefly the initial distributions to each department, both direct and indirect; then proceed with the distributions of the Indirect to the Direct Departments, and finally to Production Centers; getting to the meat of the subject, as soon as possible, and will try to bring out controversial points.

Initial Distributions to Individual Departments

It need hardly be stated that departmentization is an important factor in cost accounting. The greater the extent to which a plant has had its activities divided, with the direct expenses charged to the activity affected, the easier subsequent distributions can be made. Assuming that the plant has been thoroughly departmentized from the Power Plant, through the various Productive, Maintenance and Control Departments, the overhead items may be distributed, for practical purposes, in accordance with a simple, almost elemental, chart. (See chart.) The numerous and minor complications in this distribution, some of which arise in every plant, have not been noted on the chart.

It is assumed further that the accumulation has taken care of all indirect labor and supply charges through the indirect labor and supply distributions; that special charges have been handled through the Voucher Register, and that maintenance work has been transferred to the departments served.

Fixed Charges

(Items No. 1 to No. 4 and No. 6 to No. 9 on Chart)

The details necessary for properly distributing most of the fixed charges are:

1. Schedules of valuations of the various classes of buildings, machines and equipment by departments and by classifications.
2. Schedules of depreciation for the various classes of plant items.
3. Cubic feet of each department, or floor area (sq. ft.), if the distance between floors is uniform.

With this data it is merely an arithmetical problem to make up standard schedules for the fixed charges which vary little from month to month, and monthly distributions for building maintenance unless maintenance charges are carried as budgeted items.

Power, Heat and Light

(Items No. 5 and No. 11 on Chart)

The next step is the distribution of the power, heat and light items to each department (Direct and Indirect). Power Cost per kilowatt or horse-power hour is assumed to have already been obtained and the distribution is based upon meter readings, if possible, but more often upon rated horse-power and operating time of the motors.

Light and heat is distributed upon the basis of lighting requirements and cubic feet or floor area (sq. ft.) giving due consideration to departments requiring more or less of this service than the average.

For practical purposes none of the expense of the General Overhead Departments is distributed to the Power and Maintenance Departments.

Supervision and Operating Charges

(Items No. 10 and No. 12 to 16 on Chart)

Supervision and Operating charges from machinery maintenance to scrap loss are charged directly, not only to the producing but to the maintenance and control departments. Maintenance work is charged to the departments served through standing or special repair and maintenance orders. This work, when charged to the power and to the direct producing departments, carries a man-hour overhead rate sufficient to cover the approximate expense of the maintenance department in question. No overhead is charged on maintenance work done for other indirect departments.

At this point all departments (except the Maintenance Departments) show direct charges, fixed charges, and maintenance charges. The maintenance departments, having charged the departments served with both labor and overhead, theoretically, should be clear, but they will probably show a balance either over- or under-distributed which is carried to the General Overhead account.

Distributing General Overhead to Direct Producing Departments

(Items No. 17 to No. 28 on Chart)

After the power and maintenance departments have been taken care of, it is then necessary to distribute the expenses of the General Overhead Departments. No *practical* purpose is served in attempting to distribute the cost of running any of these departments to any other department in the classification.

The cost of many of these departments or subdivisions of them may be charged direct to some one producing department which it serves, or distributed to two or more departments served. A specific instance is a subdivision of stores separated from the general stores and maintained for the service of one or more specific departments, although under the supervision of the general storekeeper. There is no reason for not charging directly the departments served, providing the departmentization of the storerooms has been carried to an extent permitting such direct charging. After these specific cases have been cared for, there remains the balance of the expenses of the General Overhead Departments, and the Over- or Under-Distributed Expense of the Maintenance Departments. One of the most perplexing questions now arises, namely, "What is the best method to follow so that each manufactured item will bear its fair share of these general charges?"

A familiar and probably the most overworked basis of any is the Productive Man-Hour. This is referred to as an "overworked" basis because it is readily ascertained and too frequently used, when a more specific method would be the distribution of each department or account in the General Overhead group, based on a careful study of each item and its relation to the Direct Departments. For example, salaries of the plant manager and other general plant executives are not fairly spread on a Productive Man-Hour basis to such departments as are Automatic Screw Machine Departments, where very few men but much valuable equipment is utilized and an Assembly Department where the number of man-hours is very high, but the value of equipment is comparatively low. For the item mentioned, production center hours would be better.

These complications have to be worked out in each individual case, but in the absence of a better base, Productive Man-Hours

* From N. A. C. A. Bulletin.

may be used. If this basis be accepted, let us assume all Overhead charges have been allocated to the Producing Departments. The next step is to decide on the plan of applying the overhead to productive work.

Applying the Overhead to the Product

It will not be possible to go into detail of the many methods by which overhead may be applied, most of which are sound in certain lines of manufacture.

The principal methods are:

1. Percentage on Prime Cost;
2. Percentage on Productive Labor;
3. Rate per Unit of Product;
4. Rate per Productive Man-Hour;
5. Rate per Machine or Production Center-Hour.

1. Percentage of Prime Cost.—This method is satisfactory where the materials handled are similar, and the labor cost and equipment used are uniform.

The principal objection to this method, however, is that most manufacturing operations cover products containing material and labor of different values, this value having no relation to the overhead; and in other instances different kinds of equipment are used in processing the materials. In such cases it is obvious that this plan would be merely a means of getting rid of the amount of the overhead without regard to each product bearing its fair share.

2. Percentage of Productive Labor.—This method is acceptable in plan where the earnings are uniform and where workers use similar tools or machine.

This plan, like the percentage of prime-cost method, falls down where earnings vary and equipment differs.

3. Rate Per Unit of Product.—In a flour mill, a cement mill, or in fact, any plant where the product is extremely uniform, a simple base is the product itself. This rate is ascertained by dividing the total expense by the number of units produced in a given period.

4. Rate Per Productive Man-Hour.—This method would be satisfactory where all workers use the same class of tools or machines, even though wage rates or earnings vary. While this plan eliminates the objection of the percentage of prime cost and the percentage of productive labor methods as to the variations in costs of material and labor, it falls short where the equipment differs. This difference is often quite marked.

5. Rate Per Machine or Production Center Hour.—This method will cover a situation where the product or the tools and equipment differ or the earnings vary, regardless of the extent of such difference or variance.

For either of the first four above mentioned methods no further distributions are needed than those described above. The only other element needed to obtain the overhead rate is the prime cost of the product for Method No. 1 and the value of Productive Labor for Method No. 2. These values applied to the total overhead will give the percentage to be added to the prime cost and productive labor cost.

For method No. 3, as mentioned under its description, the total quantity of units produced is used as the divisor and a value per unit obtained which will absorb the necessary amount of Overhead.

For method No. 4 the Productive Man-Hours is the other element which, divided into the total overhead will give the rate per productive hour to be applied.

In all cases "Standards" or "Normals" are much to be preferred—that is "standard" prime or labor costs, or the "normal" number of productive hours, or units of product.

Distributing for the Production Center Rate

For the Production Center-Hour plant (method No. 5) a further distribution is necessary. As a matter of fact, this plan involves carrying the idea of departmentalization to the fullest extent, so that in no one department or center will there be two production units of different values, space or power requirements. In other words, a production center is a unit of production (or group of identical units), ranging from a bench to the most expensive machine in the plant, together with its auxiliary tools and other equipment.

The chart will help to explain the basis for distributing the overhead to Production Centers.

Fixed Charges, items No. 1 to 9 on the chart are carried to the production center on the same basis as to the department.

Supervision (item No. 10) is charged to the production center on the basis of normal production center hours; Power (item No. 11) on the basis of horse power hours.

Maintenance (items Nos. 12 and 13) can largely be charged directly to the center affected. Miscellaneous maintenance charges collected on standing orders may be distributed on the basis of the direct maintenance charges.

Supplies (item No. 14) in some cases can be allocated to the center affected, such as fuel oil for furnaces, hardening compounds, etc.; items not so chargeable may be distributed on the basis of normal productive man hours for items used largely in proportion to the number of men, or machine hours for items used in proportion to the machine time.

Indirect Labor, Scrap Loss and General Overhead (items Nos. 15 to 28) are distributed upon a basis of normal production center hours.

At this point all expenses in the several groups have been allocated to the Production Centers.

Normal Operating Time of Centers

The next step is the determination of the normal operating time of centers. "Normals," scientifically arrived at are, of course, to be preferred. As a beginning, however, the normal capacity of each center should be compared with past records of operating time (during normal periods). With the information, and a reasonable amount of common sense, figures may be established representing the normal operating time of each center when the plant is running under normal conditions. Applying this normal operating time to the fixed charges, and that portion of the General Burden which may be classified as fixed, we obtain the "fixed rate" for the center. This is also the "idle" time rate or the rate per hour for the machine ready to begin an operation.

Over—or Under—Distributed Overhead

Since the rate for the fixed charges is based upon normal time, operating *less* than normal will leave the correct portion of these items unearned which is carried to the Profit and Loss Account. Operating *more* than normal will cause a greater amount of overhead to be applied than incurred, which is also carried to the Profit and Loss account as a credit.

Since the rate for the operating or variable charges is based upon *actual* or estimated operating time, these charges will be entirely absorbed (with the usual variations) if they are checked with reasonable frequency.

This method, if applied with a generous portion of common sense, produces cost records which correctly show the effect of transferring a piece of work from one machine to another.

A record of idle equipment is maintained and the reasons for idleness are shown. The information on this record is incorporated on a monthly comparative report to the foreman (shown below).

Many short cuts and some arbitrary distributions may be made, but it is not as important to distribute with theoretical accuracy every overhead item as it is to distribute them consistently and with practical accuracy.

The most important points to observe in distributing to production centers are:

1. To get all expense to the Production Centers without endangering the whole plan by striving for theoretical accuracy.
2. To establish normal operating times.
3. To establish with the aid of the above figures normal over-

head rates that will reflect, in the cost records, changes in methods and equipment rather than changes in volume of production.

OVERHEAD DISTRIBUTION CHART

	Basis of Distribution To Departments	To Prod. Centers
Fixed Charges:		
1—Depreciation of Buildings		
2—Fire Insurance of Buildings	Space	Space
3—Taxes (Real Estate)		
4—Building Maintenance		
5—Heat and Light		
6—Depreciation of Machinery		
7—Depreciation of Motors		
8—Depreciation of Small Tools	Value	Value
9—Depreciation of Furniture and Fixtures		
10—Supervision (Departmental)		
Operating Charges:	Direct	Normal Prod. Center Hrs.
11—Power	Meter Readings	H.P. Hours
12—Machine Maintenance	Direct	Direct
13—Tool Maintenance	Direct	Direct and Man Hrs. or Machine Hrs.
14—Small Tools and Supplies		
15—Indirect Labor	Direct	Normal Prod. Center Hours
16—Excessive Scrap Loss		
General Overhead:		
17—Executive		
18—Engineering		
19—Planning		
20—Purchasing	Normal Productive Man Hours	Normal Productive Center Hours
21—Stores		
22—Accounting		
23—Personnel		
24—Hospital		
25—Fire Protection and Safety		
26—Shipping		
27—Unclassified		
28—Maintenance Depts. (Under- or Over-distributed)		

Mr....., Foreman
Dept. No. .....

Overhead items not entirely controllable:	Average Monthly 1923	Budget Monthly 1924	1924 January	1924 February
Depreciation	$4,000.00	$4,200.00	$4,200.00	
Fire Insurance	13.00	13.00	13.00	
Taxes (Real Estate)	70.00	80.00	80.00	
Bldg. Maintenance	180.00	150.00	140.00	
Heat and Light	125.00	110.00	150.00	
General Overhead (Inc. Supervision)	4,350.00	4,000.00	4,100.00	
Total	$8,738.00	$8,553.00	$8,683.00	
Overhead items partially or entirely controllable:				
Power	$700.00	$600.00	$700.00	
Machine Maintenance	1,050.00	900.00	900.00	
Tool Maintenance	3,500.00	3,100.00	3,700.00	
Perishable Tools	120.00	100.00	140.00	
Supplies	1,050.00	925.00	900.00	
Indirect Labor	930.00	800.00	900.00	
Excessive Scrap Loss	100.00	90.00	95.00	
Total	$7,450.00	$6,515.00	$7,335.00	
Cost of Controllable Items per Productive Hour	1.05	.81	.82	
Total Overhead	$16,189.00	$15,068.00	$16,018.00	
Overhead Earned	11,490.00	12,375.00	14,233.00	
Overhead Unearned	4,698.00	2,693.00	1,785.00	
	Hours	Hours	Hours	
Total Possible Operating Time (Prod. Center Hrs.)	13,885	14,285	14,285	
Actual Operating Time	7,085	8,000	9,000	
Idle Time	6,800	6,285	5,285	
Percent Idle of Total Possible Operating Time	49%	44%	37%	
Analysis of Idle Time:				
Lack of Work	6,120	5,656	4,756	
Lack of Help	.....	.....	.....	
Lack of Material	.....	.....	.....	
Repairs	544	503	423	
Poor Planning	136	126	106	

Union Paper & Twine Co.'s New Quarters

The Union Paper and Twine Company, of Buffalo, N. Y., announce that they are now located in the Larkin Terminal Building, where they have unusual facilities for serving their customers in the most prompt and efficient manner. The Union Paper and Twine Company are agents for some of the largest paper mills in the United States, including Dill and Collins Company, West Virginia Pulp and Paper Company, Rex Paper Company, Brown Company, International Paper Company, and others of national repute.

Canadian Paper Exports Increase

The report issued by the Canadian Pulp and Paper Association states that exports of pulp and paper from Canada in November were valued at $13,967,287. Compared with the previous month there was an increase of $23,524 while compared with November 1924 the increase was $2,201,856.

Exports of wood-pulp in November were valued at $4,598,184 or $537,100 greater than in November 1924 while exports of paper were $9,369,103, an increase of $1,664,756 over November of last year.

Details for the month are given below:

	November 1925 Tons	November 1925 Dollars	November 1924 Tons	November 1924 Dollars
Pulp—				
Mechanical	45,198	1,300,567	40,937	1,186,866
Sulphite Bleached	16,535	1,278,983	14,240	1,050,060
Sulphite Unbleached	23,455	1,249,137	23,260	1,192,814
Sulphate	12,650	769,497	10,452	631,344
	97,838	4,598,184	88,889	4,061,084
Paper—				
News print	122,486	8,678,472	96,981	7,114,018
Wrapping	1,914	254,854	1,210	182,644
Book (cwts.)	5,123	48,314	2,728	29,831
Writing (cwts.)	1,084	7,335	2,567	27,017
All other	.....	380,128	.....	354,837
		9,369,103		7,704,347

For the eleven months ending November 30th the total exports of pulp and paper were valued at $139,430,915 which is an increase of $12,966,365 over the total for the corresponding months of 1924. In this period the exports of pulp increased from $36,537,527 in 1924 to $43,306,575 in 1925, while exports of paper rose from $89,927,023 in the eleven months of last year to $96,124,340 in the current year.

Following are the details for the eleven months period:

	11 months 1925 Tons	11 months 1925 Dollars	11 months 1924 Tons	11 months 1924 Dollars
Pulp—				
Mechanical	322,865	9,447,062	229,508	7,181,176
Sulphate	135,750	8,294,728	129,603	7,689,374
Sulphite Bleached	171,731	12,910,055	150,986	11,285,526
Sulphite Unbleached	235,906	12,654,730	199,046	10,381,451
	866,252	43,306,575	709,143	36,537,527
Paper—				
News print	1,264,515	89,165,482	1,103,540	82,424,597
Wrapping	19,016	2,573,682	19,427	2,894,794
Book (cwts.)	40,254	377,269	21,599	177,122
Writing (cwts.)	9,880	82,108	18,377	193,221
Paperboard	.....	2,881,040	.....	3,125,694
All Other	.....	1,044,759	.....	1,011,595
		96,124,340		89,927,023

Exports of pulpwood in November amounted to 61,608 cords valued at $627,411. For the first eleven months of the current year the total pulpwood exported was 1,351,728 cords valued at $13,469,975, while in the corresponding months of 1924, the total was 1,260,777 cords valued at $12,886,192.

Important Timber Auction February 13th

MONTREAL, Que., December 28, 1925.—Official notice is given in the *Quebec Official Gazette* setting February 13 next for the leasing by auction of blocks of timber limits. The sale will be one of the most important which has taken place in this province in years. An area of over 5,000 square miles, divided into four blocks, and for which the bidders will be some of the largest pulp and paper interests of the province, will be offered.

These limits are located on the Manouan, Aux Rats, Aschamouchouan and Mistassini Rivers. In regard to the block of timber located on the last mentioned river, a clause of the lease will provide that a water power of a possible development of about 20,000 horse power must be utilized, and that a pulp and paper mill must be built within five years. The erection of such a mill in that section of the Lake St. John district will mean that the Canadian National Railways will extend its line to meet the requirements and to ship the production. Up to now, those known to be interested in the coming sale are Belgo, Price Brothers, Steel-Tremblay and Mr. Walberg.

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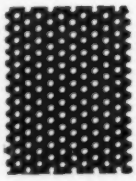

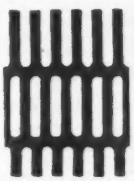

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NEW YORK OFFICE, 114 LIBERTY STREET

Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JANUARY 2, 1926

SUMMARY

Wall paper .....95 bls., 41 cs.
Hangings .....74 bls., 22 cs., 4 pgs.
Wallboard .....38 cs.
News print .....131 rolls
Printing paper .....28 rolls, 58 cs.
Wrapping paper .....12 bls., 16 cs., 107 bdls.
Kraft paper .....340 rolls
Fancy paper .....3 cs.
Photo-paper .....7 cs.
Decalcomania paper .....9 cs.
Metal paper .....17 cs.
Tissue paper .....25 cs.
Drawing paper .....26 cs.
Tracing paper .....2 cs.
Filter paper .....15 cs.
Writing paper .....2 cs.
Envelopes .....3 cs.
Miscellaneous paper ...1523 rolls, 143 bls., 22 cs.

WALL PAPER

F. J. Emmerich, Albert Ballin, Hamburg, 16 bls.
F. J. Emmerich, Alaunia, Liverpool, 27 bls., 19 cs.
F. J. Emmerich, Minnewaska, London, 2 cs., 3 bls.
W. H. S. Lloyd & Co., Minnewaska, London, 26 bls.
R. F. Downing & Co., Vardulia, London, 19 cs.
A. C. Dodman, Jr., Inc., Homeric, Southampton, 23 bls., 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Alaunia, Liverpool, 11 bls.
W. H. S. Lloyd & Co., Minnewaska, London, 19 cs., 5 bls.
Hensel, Bruckman & Lorbacher, Capetown Maru, Hamburg, 4 pgs.
A. C. Dodman, Jr., Inc., Doric, Liverpool, 3 cs., 58 bls.

WALL BOARD

O. M. Baxter, Stockholm, Gothenburg, 38 cs.

NEWS PRINT

Irving Bank-Columbia Trust Co., A. Ballin, Hamburg, 131 rolls.

PRINTING PAPER

Keuffel & Esser, A. Ballin, Hamburg, 28 rolls.
P. H. Petry & Co., A. Ballin, Hamburg, 11 cs.
Perry, Ryer & Co., Caledonia, Glasgow, 44 cs.
B. F. Drakenfeld & Co., Alaunia, Liverpool, 3 cs.

WRAPPING PAPER

Stoehr & Sons, Capetown Maru, Hamburg, 12 bls.
C. Steiner, A. Ballin, Hamburg, 5 cs.
Blauvelt Wiley Paper Manfg. Co., Caledonia, Glasgow, 107 bdls.
A. C. Dodman, Jr., Inc., Homeric, Southampton, 11 cs.

KRAFT PAPER

Arkell Safety Bag Co., Stockholm, Gothenburg, 340 rolls.

FANCY PAPER

Whiting & Patterson Co., Homeric, Southampton, 3 cs.

PHOTO-PAPER

Draeger Shipping Co., Stockholm, Gothenburg, 5 cs.
J. J. Gavin, Alaunia, Liverpool, 2 cs.

DECALCOMANIA PAPER

C. W. Sellers, A. Ballin, Hamburg, 9 cs.

METAL PAPER

Hensel, Bruckman & Lorbacher, A. Ballin, Hamburg, 17 cs.

TISSUE PAPER

F. C. Strype, Alaunia, Liverpool, 17 cs.
Brooks Paper Co., Alaunia, Liverpool, 8 cs.

DRAWING PAPER

Keuffel & Esser, A. Ballin, Hamburg, 26 cs.

TRACING PAPER

E. Dietzgen & Co., A. Ballin, Hamburg, 2 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Vardulia, London, 4 cs.
H. Reeve Angel & Co., Inc., Minnewaska, London, 11 cs.

WRITING PAPER

Distinctive Writing Paper Co., A. Ballin, Hamburg, 2 cs.

ENVELOPES

H. Reeve Angel & Co., Inc., Vardulia, London, 3 cs.

MISCELLANEOUS PAPER

The Borregaard Co., Inc., Stockholm, Gothenburg, 1 roll, 1 bale.
M. M. Cohen, Stockholm, Gothenburg, 100 bls.
Wilkinson Bros. & Co., Inc., Stockholm, Gothenburg, 38 bls., 348 rolls.
C. K. MacAlpine & Co., Stockholm, Gothenburg, 2 bls., 1174 rolls.
E. H. Sergeant & Co., Stockholm, Gothenburg, 6 cs.
C. Schleicher Schull, A. Ballin, Hamburg, 6 cs.
Y. Yubuki, Tsuyama Maru, Kobe, 5 cs.
G. W. Sheldon & Co., Minnewaska, London, 5 cs.

RAGS, BAGGINGS, ETC.

A. W. Fenton, Inc., Aden Maru, Hamburg, 162 bls. rags.
P. Berlowitz, Aden Maru, Hamburg, 37 bls. rags.
Maurice O'Meara Co., Aden Maru, Hamburg, 37 bls. rags.
Franklin Paperstock Co., Aden Maru, Hamburg, 6 bls. rags.
R. Blank, Aden Maru, Hamburg, 6 bls. rags.
D. M. Hicks, Aden Maru, Hamburg, 17 bls. rags.
Kidder Peabody Accep. Corp., Cold Harbor, Manchester, 19 bls. cotton waste.
J. Munroe & Co., Cold Harbor, Manchester, 38 bls. cotton waste.
Merchants National Bank, Cold Harbor, Manchester, 64 bls. bagging.
A. W. Fenton, Inc., Capetown Maru, Hamburg, 11 bls. rags.
E. J. Keller Co., Inc., A. Ballin, Hamburg, 239 bls. rags.
E. J. Keller Co., Inc., A. Ballin, Hamburg, 147 bls. bagging.
Mechanics & Metals National Bank, A. Ballin, Hamburg, 177 bls. rags.
Salomon Bros. & Co., A. Ballin, Hamburg, 40 bls. bagging.
Amsinck, Sonne & Co., Inc., A. Ballin, Hamburg, 54 bls. rags.
Brown Bros. & Co., Caledonia, Glasgow, 108 bls. rags.
Amsinck, Sonne & Co., Inc., Caledonia, Glasgow, 14 bls. rags.
V. Galaup, Pipestone County, Havre, 122 bls. rags.
S. Birkenstein & Sons, Pipestone County, Havre, 9 bls. rags.
Atterbury Bros., Inc., Pipestone County, Havre, 10 bls. rags.
S. Silberman, Pipestone County, Havre, 57 bls. rags.
J. J. Patricof, Pipestone County, Havre, 31 bls. rags.
The Stone Bros. Co., Inc., Pipestone County, Havre, 123 bls. rags.
L. H. Abenheimer, Pipestone County, Havre, 20 bls. bagging.
Salomon Bros. & Co., Pipestone County, Havre, 26 bls. waste.
Salomon Bros. & Co., Pipestone County, Havre, 23 bls. bagging.
A. W. Fenton, Inc., Pipestone County, Havre, 42 bls. rags.
J. J. Patricof, Pipestone County, Dunkirk, 87 bls. rags.
Maurice O'Meara Co., Pipestone County, Dunkirk, 50 bls. bagging.
The Barret Co., Pipestone County, Dunkirk, 84 bls. rags.
Atlas Waste Manfg. Co., Tsuyama Maru, Kobe, 70 bls. rags.
Mutnick Bros., Doric, Liverpool, 20 bls. rags.
The Stone Bros. Co., Inc., Doric, Liverpool, 19 bls. rags.
Chase National Bank, Brosund, Leningrad, 4378 bls. rags.
Castle & Overton, Inc., Oscar II, Copenhagen, 172 bls. rags.
National Bank of Commerce, Oscar II, Copenhagen, 225 bls. rags.
57 bls. rags.
Castle & &Overton, Inc., Republic, Bremen.
Castle & Overton, Inc., Hellen, Spain, 187 bls. tares.

OLD ROPE

Brown Bros. & Co., Oscar II, Copenhagen; 39 coils.
Brown Bros. & Co., Caledonia, Glasgow, 44 coils.
Brown Bros. & Co., Minnewaska, London, 104 coils

WOOD PULP

Castle & Overton, Inc., Capetown Maru, Hamburg, 2510 bls. wood pulp.
W. Hartman & Co., Inc., Capetown Maru, Hamburg, 625 bls. wood pulp, 97 tons.
Scandinavian Pulp Agency, Inc., Stockholm, Gothenburg, 127 bls. sulphate pulp.
Scandinavian Pulp Agency, Inc., Stockholm, Gothenburg, 508 bls. kraft pulp.
Johanson, Wales & Sparre, Inc., Stockholm, Gothenburg, 1113 bls. sulphite pulp.
Johanson, Wales & Sparre, Inc., Stockholm, Gothenburg, 329 bls. dry soda pulp.
E. M. Sergeant & Co., Stockholm, Gothenburg, 269 bls. dry soda pulp.
E. M. Sergeant & Co., Stockholm, Gothenburg, 256 bls. sulphite pulp.
Buck, Kiaer & Co., Inc., Oscar II, Oslo, 320 bls. sulphate pulp.
Buck, Kiaer & Co., Inc., Oscar II, Copenhagen, 900 bls. sulphite pulp.
Irving Bank-Columbia Trust Co., Oscar II, Copenhagen, 1100 bls. wood pulp.

WOOD PULP BOARDS

Wilkinson Bros. & Co., Inc., Stockholm, Gothenburg, 90 rolls.

CASEIN

Brown Bros. & Co., Castilian Prince, Buenos Aires, 334 bags.

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 2, 1926

J. B. Moors & Co., Vardulia, London, 272 bls. rags.
Salomon Bros. & Co., Brenta II, Marseilles, 83 bls. rags.
C. J. Webb & Sons, Pipestone County, Havre, 25 bls. rags.
Atterbury & McKelvey, Pipestone County, Havre, 247 bls. rags.
L. H. Abenheimer, Pipestone County, Havre, 130 bls. rags.
V. Galaup, Pipestone County, Havre, 6 bls. rags.
E. J. Keller Co., Inc., Pipestone County, Havre, 363 bls. rags.
Salomon Bros. & Co., Pipestone County, Havre, 63 bls. rags.
Salomon Bros. & Co., Pipestone County, Dunkirk, 394 bls. rags.
E. Butterworth & Co., Inc., Pipestone County, Dunkirk, 58 bls. rags.
L. H. Abenheimer, Pipestone County, Dunkirk, 101 bls. rags.
S. Birkenstein Sons, Pipestone County, Dunkirk, 218 bls. rags.
Castle & Overton, Inc., Eastern Victor, Antwerp, 95 bls. rags.
Castle & Overton, Inc., Kentucky, Denmark, 144 coils old rope.
Castle & Overton, Inc., Kentucky, Norway, 1000 bls. wood pulp.
Castle & Overton, Inc., West Celina, Germany 1100 bls. wood pulp.
E. J. Keller Co., Inc., D. Dollar Keel, 100 bls. rags.

BOSTON IMPORTS

WEEK ENDING JANUARY 2, 1926

T. D. Downing & Co., Aden Maru, Hamburg, 100 bls. wrapping paper.
G. M. Graves Co., Aden Maru, Hamburg, 120 bls. rags.
Reis & Co., Aden Maru, Hamburg, 50 bls. cotton waste.
Maurice O'Meara Co., Aden Maru, Hamburg, 133 bls. rags.
Katzenstein & Keene, Inc., Aden Maru, Hamburg, 25 bls. rags.
Bulkley, Dunton & Co., Aden Maru, Hamburg.
W. Hartman & Co., Aden Maru, Hamburg, 630 260 bls. wood pulp, 52 tons.
bls. wood pulp, 97 tons.

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending October 31, 1925, and for the Ten Months Ending October 31, 1925, as Compared with Corresponding Months of Previous Year

IMPORTS—PAPER

	October				Ten Months Ending October 31			
	1924		1925		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Paper, except printed matter (total)	.....	9,983,390	.....	11,701,966	.....	97,895,704	.....	99,660,102
Printing paper—								
Standard newsprint ....lbs...free	228,242,031	8,471,653	290,175,208	10,401,618	2,237,842,605	83,945,638	2,402,957,572	86,027,637
Imported from—								
Finland	7,152,885	223,577	3,999,575	115,744	61,719,136	1,933,310	40,687,194	1,249,923
Germany	1,759,237	50,958	4,347,517	152,977	68,367,169	2,077,418	45,678,063	1,420,125
Netherlands	73,506	2,408	.....	.....	1,868,043	59,181	697,759	23,557
Norway	3,772,260	120,862	2,944,387	88,219	24,531,149	794,374	32,477,532	987,285
Sweden	11,228,642	347,110	11,050,253	327,367	98,537,357	3,113,457	109,638,402	3,299,739
Canada	203,755,554	7,711,734	259,790,580	9,451,981	1,978,998,910	75,853,290	2,155,181,746	78,404,880
Other countries	499,947	15,004	7,842,896	265,330	3,820,841	114,608	18,596,876	642,128
All other, n. e. s.....lbs...dut.	2,700,263	117,530	1,145,557	56,666	23,167,051	966,631	14,531,179	694,918
Grease-proof and water-proof papers..lbs...dut.	54,209	9,008	300,910	35,858	1,166,825	132,541	1,783,878	228,650
Kraft wrapping paper.....lbs...dut.	1,877,519	68,538	617,313	26,973	24,268,712	928,720	11,867,424	493,734
All other wrapping paper.....lbs...dut.	1,501,347	63,027	184,070	11,918	19,546,869	757,064	4,645,505	218,117
Writing, drawing, bond, etc.....lbs...dut.	202,076	56,494	355,211	86,625	2,153,638	493,105	2,596,323	604,634
Surface coated .....lbs...dut.	298,389	54,855	103,419	47,146	1,617,259	377,977	1,280,643	437,216
Tissue paper .....lbs...dut.	377,565	134,474	224,143	76,487	2,039,467	825,689	2,308,149	969,954
Paper boards—								
Pulp boards in rolls.....lbs...dut.	7,027,833	188,410	5,994,434	148,919	66,911,600	1,849,365	61,028,176	1,596,789
Other paper boards, n. e. s.....lbs...dut.	3,674,309	72,255	1,608,954	42,628	26,062,333	607,032	25,414,991	617,180
Cigarette paper, cigarette books and covers .....lbs...dut.	1,004,206	241,460	913,236	212,073	8,250,050	2,157,709	9,034,048	2,528,749
Photographic paper .....lbs...dut.	200,404	43,202	301,392	72,665	2,914,914	588,307	2,842,420	642,265
Hanging paper .....lbs...dut.	1,203,350	55,157	791,721	56,165	11,708,689	509,087	4,523,518	422,464
Paper boxes .....lbs...dut.	131,225	100,240	129,544	83,752	1,400,930	889,150	1,960,341	1,159,209
Duplex decalcomania, not printed ....lbs...free	58,534	13,866	26,464	6,259	410,869	97,642	345,708	88,851
All other .....dut.	.....	293,221	.....	336,214	.....	2,770,047	.....	2,929,735
Books and other printed matter (total).....								
Books and pamphlets in foreign languages .....lbs...free	 239,479	877,685 147,841	 189,721	1,819,282 289,278	 1,982,426	7,935,044 1,191,494	 1,669,603	11,134,005 1,422,605
Books, maps, music, etc., 20 years old lbs...free	34,937	85,761	48,671	415,102	306,516	1,347,615	344,779	3,093,091
Other books, etc. .....lbs...free	230,030	133,716	204,518	554,729	2,010,963	1,385,321	2,243,635	2,014,458
Books, pamphlets, and music, n. e. s..lbs...dut.	329,723	250,160	464,705	285,676	2,776,843	1,942,680	3,108,244	2,293,112
Maps, charts, and other printed matter n. e. s. .....dut.	.....	75,062	.....	63,552	.....	693,586	.....	751,703
Lithographically printed matter, n. e. s.—	6,739	9,596	6,707	8,225				
Cigar bands, labels, and flaps.....lbs...dut.					94,533	121,550	139,669	123,924
Decalcomanias .....lbs...dut.	20,520	31,115	27,331	43,590	215,928	305,885	238,970	364,828
All other .....dut.	.....	144,434	.....	159,130	.....	946,913	.....	1,070,284

WOOD PULP

Mechanically ground wood pulp.....ton..free	27,084	887,551	29,296	852,339	171,301	5,761,861	235,274	6,876,033
Chemical wood pulp—								
Sulphite, unbleached.....ton..free	63,060	3,281,194	55,970	3,014,204	452,613	24,215,739	484,422	26,077,940
Sulphite, bleached .....ton..free	26,918	1,947,550	22,283	1,839,197	222,351	17,165,169	244,742	19,111,216
Total sulphite .....ton	89,978	5,228,744	78,253	4,853,401	674,964	41,380,908	729,164	45,189,156
Imported from—								
Finland	3,848	185,643	4,428	235,095	49,087	2,543,422	51,181	2,365,625
Germany	9,575	559,429	2,601	173,564	54,201	3,211,892	48,029	3,011,443
Norway	8,116	562,340	5,407	457,472	47,141	3,362,271	58,707	4,416,979
Sweden	36,007	1,956,253	28,300	1,619,188	239,467	13,555,889	230,282	13,509,137
Canada	29,353	1,818,576	36,952	2,337,157	263,942	17,469,910	317,895	20,564,818
Other countries	3,079	146,503	565	30,925	21,126	1,237,524	23,070	1,321,154
Sulphate pulp, unbleached (Kraft pulp .....ton..free	29,373	1,601,926	25,524	1,538,729	232,648	13,323,690	252,899	14,975,607
Imported from—								
pulp) .....ton..free	1,480	67,956	540	28,406	10,854	519,164	11,933	628,570
Norway	1,432	73,964	424	26,872	11,002	551,430	6,460	381,921
Sweden	15,442	780,559	14,501	835,829	101,826	5,372,580	124,152	6,917,930
Canada	10,899	673,041	9,785	633,466	106,225	6,741,814	107,419	6,877,513
Other countries	120	6,406	274	14,156	2,741	138,702	2,935	169,673
Sulphate pulp, bleached.....ton..free	1,603	97,165	1,034	64,587	16,858	948,684	11,292	695,614
Other pulp .....ton..free	163	15,856	40	3,176	1,751	107,338	2,013	143,805

CHEMICALS AND OTHER PAPER MAKERS' MATERIALS

Color, dyes, stains, color acids, and color bases, n. e. s. .....lbs...dut.	426,848	631,870	366,952	383,066	2,655,095	3,358,075	4,871,211	6,253,609
Imported from—								
France	23,032	30,414	9,835	16,849	111,686	160,321	111,374	155,286
Germany	208,803	319,243	184,107	175,604	1,276,121	1,545,169	2,494,734	3,284,401
Italy	16,832	26,673	6,357	7,018	131,377	183,494	189,313	230,978
Switzerland	119,094	177,322	128,147	136,829	858,989	1,131,045	1,559,669	1,908,887
United Kingdom	8,734	6,129	15,254	13,272	69,280	65,325	157,424	132,298
Other countries	50,353	72,089	23,252	33,494	207,642	272,721	358,697	541,759
Casein or lactarene .....lbs...dut.	984,980	74,285	868,454	87,613	14,956,139	1,185,208	16,754,402	1,382,564

(Continued on page 70)

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(*Continued from page 69*)

Paper and Manufactures of	October 1924 Quantity	October 1924 Value	October 1925 Quantity	October 1925 Value	Ten Months Ending October 31 1924 Quantity	Ten Months Ending October 31 1924 Value	Ten Months Ending October 31 1925 Quantity	Ten Months Ending October 31 1925 Value
CRUDE PAPER STOCK								
Rags for paper stock ..... lbs...free	53,175,609	1,390,666	47,110,443	1,248,895	412,596,427	9,188,625	497,996,351	13,893,564
Waste bagging, waste paper, etc..... lbs...free	9,785,555	109,980	10,786,805	179,236	90,026,288	1,042,756	104,663,584	1,818,154
Old rope and all other paper stock... lbs...free	8,045,500	442,220	4,782,567	216,737	82,617,933	4,365,097	55,035,119	2,986,874
EXPORTS—PAPER								
Paper, except printed matter (total)	.....	2,296,549	.....	2,150,653	.....	20,108,760	.....	19,904,746
Printing paper—								
Newsprint paper ..... lbs.	3,354,320	167,482	3,568,831	156,478	28,709,995	1,472,197	35,697,173	1,572,910
Exported to—								
Canada	117,606	8,165	175,501	11,567	900,949	69,838	1,025,568	70,462
Central America	92,120	5,319	123,343	5,453	615,118	34,289	982,102	49,736
Mexico	108,581	5,967	130,412	7,554	2,059,949	109,239	1,565,556	76,884
Cuba	1,987,375	86,625	925,054	35,185	16,222,002	734,518	15,206,546	621,647
South America	333,305	18,845	813,806	36,475	2,033,127	114,054	6,862,440	312,868
China	228,256	16,639	821,252	34,827	1,946,824	142,139	3,399,112	137,921
Philippine Islands	314,072	14,904	258,953	12,626	3,366,852	163,490	4,360,455	196,275
Other countries	173,005	11,018	320,510	12,791	1,565,174	104,630	2,295,394	107,117
Book paper, not coated..... lbs.	2,028,972	212,177	1,632,894	163,249	14,909,872	1,705,031	14,511,449	1,628,697
Exported to—								
United Kingdom	3,571	768	9,386	1,355	689,920	135,321	120,400	20,370
Canada	135,978	17,063	172,098	19,159	1,461,354	189,068	1,826,497	219,019
Central America	72,604	7,851	42,631	4,449	533,073	58,769	587,996	62,862
Mexico	148,525	19,845	105,060	12,805	1,435,182	162,978	1,498,806	180,020
Cuba	351,227	38,051	634,900	59,806	2,989,690	336,684	4,127,748	408,386
Argentina	101,441	10,028	111,942	9,948	645,892	61,141	609,502	61,749
Brazil	44,913	5,016	23,052	2,744	323,677	42,516	272,023	39,182
Venezuela	35,914	4,418	11,249	990	448,655	49,913	588,290	53,249
Other South America	169,465	19,035	171,839	15,325	912,917	109,331	1,066,120	103,594
China	773,494	63,901	47,789	7,395	2,670,971	245,657	741,578	147,936
Philippine Islands	49,567	7,378	148,032	12,014	991,824	90,739	1,283,520	119,809
Australia	51,103	6,586	27,549	3,713	453,567	52,038	394,896	44,498
Other countries	91,170	12,237	127,367	13,546	1,353,150	170,876	1,394,073	168,033
Cover paper ..... lbs.	84,989	18,924	96,713	16,718	655,213	123,806	999,583	191,262
Greaseproof paper and waterproof paper.... lbs.	134,407	18,500	175,806	25,717	1,369,141	160,688	1,714,342	223,309
Wrapping paper—								
Kraft paper ..... lbs.	98,405	9,992	40,665	4,198	540,702	64,193	563,694	50,249
Other wrapping ..... lbs.	2,845,629	222,274	2,259,817	167,207	20,550,453	1,672,457	22,849,127	1,737,225
Surface-coated paper ..... lbs.	453,322	47,698	314,334	48,283	2,989,454	440,848	3,064,786	452,168
Tissue and crepe paper ..... lbs.	264,524	80,756	393,166	96,787	2,408,272	643,364	2,919,538	768,642
Toilet paper ..... lbs.	576,980	64,472	370,780	48,809	3,642,814	424,885	4,184,524	503,529
Paper towels and napkins..... lbs.	153,580	22,810	165,513	27,206	1,230,785	194,983	1,323,999	199,937
Box board ..... lbs.	.....	.....	3,276,111	109,865	.....	.....	15,913,032	580,470
Bristols and bristol board ..... lbs.	39,233	4,852	96,238	11,123	728,900	92,885	789,070	96,030
Other paper board and strawboard..... lbs.	6,159,632	235,881	2,722,315	128,494	63,290,811	2,473,904	26,465,549	1,289,995
Sheathing and building paper ..... lbs.	1,213,791	54,591	872,529	43,669	5,150,525	243,434	10,180,771	461,793
Wall board of paper or pulp..... sq. ft.	1,031,456	29,712	1,803,626	57,957	14,194,133	476,064	11,619,103	389,547
Blotting paper ..... lbs.	275,212	29,405	235,002	30,194	2,047,042	248,430	2,430,062	294,460
Filing folders, index cards, and other office forms ..... lbs.	34,907	10,913	90,970	26,630	371,026	132,252	549,221	180,844
Papeteries (fancy writing paper) ..... lbs.	36,152	10,838	63,565	27,016	354,324	129,548	440,490	155,989
Other writing paper ..... lbs.	383,948	61,183	475,102	77,731	3,906,863	618,610	2,965,996	544,687
Cigarette paper and books..... lbs.	65,436	23,244	67,396	20,668	796,716	285,325	425,553	126,366
Photographic paper ..... lbs.	159,036	139,093	147,241	127,865	1,401,057	1,413,320	1,484,274	1,235,552
Paper hangings (wall paper)..... yds.	1,483,937	40,356	2,117,419	56,827	19,647,205	516,876	20,010,579	514,894
Paper bags ..... lbs.	826,541	73,223	1,039,801	98,458	8,676,956	810,355	10,914,851	954,262
Boxes and cartons ..... lbs.	1,318,056	112,643	1,442,211	120,064	11,359,645	954,576	13,957,164	1,082,086
Carbon paper ..... lbs.	83,831	72,557	95,044	72,317	767,229	608,072	869,309	699,622
Envelopes ..... lbs.	238,339	49,756	165,048	32,533	2,011,522	405,891	2,063,322	392,513
Cash-register and adding-machine paper.... lbs.	172,008	15,751	181,721	20,206	1,061,989	117,078	1,377,238	144,713
Other paper and paper products..... lbs.	7,383,676	467,466	1,497,227	334,384	35,813,822	3,679,688	17,476,120	3,432,995
Books, maps, pictures, and other printed matter (total)	.....	1,890,921	.....	1,992,717	.....	16,782,713	.....	17,506,705
Books and pamphlets ..... lbs.	3,485,277	854,808	4,123,359	972,018	28,058,014	8,165,362	35,275,008	8,635,140
Maps and charts ..... lbs.	37,640	24,656	8,973	13,496	160,364	143,455	158,988	172,729
Music in books or sheets ..... lbs.	57,749	31,781	63,457	40,462	538,474	326,206	434,450	267,401
Souvenir post cards ..... lbs.	33,154	21,754	26,230	19,293	305,778	162,545	375,834	192,877
Lithographically printed matter, except post cards and maps ..... lbs.	257,737	173,424	350,334	385,735	1,931,370	1,637,252	2,813,760	1,837,091
Playing cards ..... Packs	590,757	69,018	562,159	64,565	5,422,842	604,745	6,561,168	696,271
Other printed matter ..... lbs.	1,814,131	715,480	1,565,120	497,148	14,985,506	5,743,148	16,271,363	5,705,196
WOOD PULP AND PAPER STOCK								
Sulphite wood pulp ..... tons	2,780	180,543	1,588	101,894	17,505	1,065,637	18,913	1,117,264
Soda wood pulp ..... tons	304	28,880	89	8,072	1,476	138,468	1,847	171,880
Other wood pulp ..... tons	297	32,381	1,524	87,414	4,132	413,694	7,603	798,360
Rags, and other paper stock ..... lbs.	4,330,068	87,621	14,739,417	315,838	100,089,089	1,724,524	148,419,066	2,697,181
PAPER AND PULP MILL MACHINERY								
Paper and pulp mill machinery..... lbs.	819,967	163,352	1,102,879	259,158	8,769,565	1,789,560	5,646,185	1,365,126
Kaolin, china, and paper clay..... ton..dut.	25,559	247,539	22,550	227,344	265,457	2,723,577	277,469	2,637,043

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PENNSYLVANIA SALT MFG. COMPANY
PHILADELPHIA, PA.

New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, January 6, 1926.

Trading in the local paper market has been practically at a standstill during the last two weeks but now that the holidays are over a speedy resumption of activities is confidently anticipated. Practically all sections of the local paper and pulp industry have enjoyed a general expansion of business during the past year compared with the preceding twelve months and all prophecies for the coming year so far have been optimistic. Sales organizations of the leading paper houses have been maturing their plans for a strenuous 1926 campaign and are looking for a continuance of active trade during at least the first half of the new year.

The position of the news print market is very sound at present and the persistent demand experienced during the course of the closing months of last year shows little sign of abatement. The new contract price for standard news print in rolls, of $3.25 per 100 pounds, f.o.b. mill, in carload shipments, became effective January 1. This welcome reduction was made possible by economies in operation effected by the manufacturers and the steadily growing production of the mills.

Demand for the various grades of board continues to be satisfactory and a good volume of inquiries are being received for box board, in particular. The fine paper market remains firm despite the post holiday lull which is only temporary. Coarse paper is in fairly good request and manufacturers are generally optimistic regarding the future.

Mechanical Pulp

Mainly on account of holidays, stock taking, and the necessary repairs to plants, there has been very little doing in the ground wood market during the past fortnight, and offerings have been decidedly limited. However, the position of the ground wood market is sound and increased trading is confidently expected from now on.

Chemical Pulp

The chemical wood pulp market is in excellent condition. Despite temporary slackness due to the recent holidays and various other contributing causes, prices are generally well maintained at the recently quoted basis. Both domestic and foreign producers are said to be well sold ahead for the current year and it is reported that some inquiries are coming in for 1927 business.

Old Rope and Bagging

Seasonal influences have affected the old rope and bagging industry recently but the market continues sound and prices remain firm. Old Manila rope appears to be the bright particular spot at present and is moving along in fine style. While very little business has been transacted in the bagging market, the limited supplies offered were fairly well observed and prices are generally holding up well.

Rags

The rag market has been very quiet during the last two weeks. Supplies of domestic rags are rather limited at present and prices are well maintained at recent levels. The imported rag market is unchanged, although an increased demand is expected for roofing rags in the near future. Foreign sellers are still asking high prices and dealers are only inclined to purchase small quantities for the time being.

Waste Paper

Only a limited demand for waste paper has been experienced during the holiday season, but with the conclusion of the inventory period, the paper mills are expected to be in the market again to replenish their stocks. The trend of the waste paper market is quite strong and prices are practically unchanged from the recent levels.

Twine

The twine market has been rather dull lately but an improvement is predicted for the near future. Competent observers declare that confidence in the twine industry is increasing and there is a general disposition to make future commitments on a larger scale. Prices of all grades are generally well maintained.

Jack Gregor Given Surprise Party

[FROM OUR REGULAR CORRESPONDENT]

NEWTON FALLS, N. Y. January 4, 1926.—On Christmas eve the paper mill employees of the Newton Falls Paper Company met at the Community Club House and held a surprise party in honor of Jack Gregor the paper mill superintendent. A musical program which had previously been arranged was enjoyed by all.

During the evening the Chairman, L. Grant, of the superintendent's office, on behalf of the employees, presented Mr. Gregor with a beautiful gold Howard watch and Waldemar chain, as a token of esteem. Mr. Gregor was completely taken by surprise, and in a few well chosen words thanked the employees for the Christmas gift.

Refreshments were served by the ladies, and the party broke up in good time, to allow every one to get home to see what Santa had left in the brand new stockings etc., they had carefully hung up previously.

A. H. Dwight Recovering

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., January 4, 1926.—A. H. Dwight, president of the Hawthorne Paper Company, has been removed from his home in Allen boulevard to New Burgess hospital. He was stricken about three months ago with apoplexy and despite his age and the seriousness of the case has shown steady and gratifying improvement. Reports from the hospital are that his general condition is satisfactory. He is daily placed in a wheel chair and given long trips through the building.

Howard Paper Co. Sends Out Samples

The Howard Paper Company of Urbana, Ohio, has just issued a very attractive portfolio containing samples of letterheads printed in three colors on Howard Bond stock. The suggestions for printing cover a variety of designs, which are illustrated, and afford excellent ideas of how attractive letterheads can be made.

To Sell Uncas Paperboard Co. Feb. 1

NORWICH, Conn., January 4, 1926.—Frank W. Browning receiver of the Uncas Paperboard Company announces that the court has changed the order to sell the plant of this concern from January 18 to February 1 at 2 o'clock in the afternoon.

A Remarkable Range of Grades, Textures and Weights

Orr Endless Felts can now be obtained up to 86 feet in length.

With our enlarged new equipment we can now furnish Paper Manufacturers with endless felts up to 86 feet in length.

Paper Manufacturers who carefully check manufacturing costs, and also strive to produce more and better paper at a lower cost per ton, prefer the unvarying quality and long service of ORR felts. A trial of them will bring about a preference that will be lasting.

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TICONDEROGA, N. Y., U. S. A.
MANUFACTURERS OF
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WARREN IMPROVED DOUBLE PATENT DRUM WINDERS
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They Satisfy!

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For Pulp and Paper Mills

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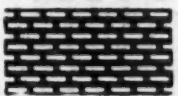
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STEEL, COPPER, BRASS, BRONZE, and other Alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

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Samples Upon Request
THE EATON DIKEMAN CO.
MILL AND MAIN OFFICE—LEE, MASS.
537 PEARL STREET NEW YORK, N. Y.

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, January 6, 1926.

While quieter conditions have prevailed in the chemical market during the last fortnight, due to the holidays, there are sufficient inquiries in the market to encourage the view that the activity recently experienced will soon be resumed. Considering the time of the year contract withdrawals are being fairly well maintained, and increased shipments of chemicals may be looked for from now on. The chemical market begins the new year in a very sound position and the general outlook is full of promise.

BLANC FIXE.—No unusual developments have transpired in the blanc fixe market. A few additional contract orders have been booked, but very little spot trading has been reported. The pulp is quoted at from $60 to $64 a ton, in bulk, at works, and the powder at from 3¼ to 4 cents a pound, in barrels, car lots, at works.

BLEACHING POWDER.—The demand for bleaching powder continues good. A considerable volume of contract business has already been booked and the situation is much better than a year ago. Prices are generally being well maintained at the recently quoted basis. Bleaching powder is now selling at from $2 to $2.40 per 100 pounds, in large drums, at works.

CAUSTIC SODA.—The caustic soda market continues quite steady and it is reported that the great bulk of the contract business for this year has already been closed. There has been a lighter movement of contract withdrawals during the last two weeks, but this condition is only seasonal. Caustic soda is quoted at from $3.10 to $3.15 per 100 pounds, at works. For less than car load lots the quotation is from $3.75 to $3.91 per 100 pounds.

CASEIN.—There has been a slight lull in the strong demand recently experienced, but prices have remained steady at the advances already announced. Shipments on standing contracts are proceeding in a fairly satisfactory manner. Domestic casein is quoted at from 12¾ to 13½ cents a pound, and foreign casein at from 13½ to 13¾ cents a pound.

CHINA CLAY.—The demand for both domestic and imported china clay has fallen off slightly owing to the holiday season. Prices have held up well, however, and no changes have been recorded. Contract withdrawals have been moderately good, and an acceleration of trading is confidently anticipated in the near future. Domestic clay is selling at $8 a ton, at mine, and pulverized at $10 a ton. Imported grades are quoted at from $13 to $22.50 a ton, ship side.

CHLORINE.—Trading in the chlorine market was only on routine lines during the past week. A good volume of contract business has been transacted lately and prices are being well maintained. Increased interest is expected to be taken in chlorine during the next few months. The quoted price for chlorine is 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders, while spot prices remain at around 4½ cents a pound.

ROSIN.—The consumption of rosin is holding up very well and the outlook for the market is bright. A more urgent demand for rosin is anticipated in the coming months and prices are expected to continue firm. The naval stores are quoting rosin at from $13.95 to $14.55, ship side, in barrels of 280 pounds.

SALT CAKE.—No radical changes have been reported in the salt cake market, and prices are practically unchanged. Contract withdrawals are being well maintained and manufacturers are looking for a prosperous year from every standpoint. Salt cake continues to sell at from $17 to $20 a ton, in bulk, at works.

SODA ASH.—Although shipments of soda ash against contract have not been large during the last two weeks, this development is only seasonal. Contract withdrawals will probably become heavy from now on. A large percentage of contract business for this year has been booked and quotations have generally been well maintained. Soda ash is still selling at from $1.35 to $1.65 per 100 pounds, in bulk, at works, and spot car lots at from $1.40 to $1.70 for the same quantity.

STARCH.—Now that the holidays are over the demand for starch is expected to increase and manufacturers are looking for an expansion of business during the next few months. Prices are firm and the market is quite steady. Special paper makers starch is quoted at $3.32 per 100 pounds, in bags and barrels.

SULPHATE OF ALUMINA.—The alumina sulphate market last week continued along routine lines and very few changes in general conditions are expected during the next few months. Shipments against contracts are proceeding in a normal manner. Sulphate of alumina continues to be quoted at from $1.40 to $1.50 per 100 pounds for commercial grades and at from $2 to $2.30 per 100 pounds for iron free.

SULPHUR.—The sulphur market is holding firm, although the demand has slightly abated. Prices are being well maintained in all instances. Manufacturers of sulphur are looking for an enormously increased consumption in the current year. Sulphur is now selling at from $15 to $16 a ton, in bulk, at mine, and at from $20 to $21 a ton, ship side.

TALC.—Trading in the talc market during the past week was fairly lively, despite the holiday lull, and the industry is undoubtedly in a sound position. Prices are well maintained and the prevailing quotation for talc is from $17 to $18 a ton, according to grade.

Saniwax Paper Co. to Build in Memphis

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., December 28, 1925.—George L. Irvine, president of the Saniwax Paper Company, recently returned from Memphis, Tenn., where he awarded a contract for the erection of a factory for the manufacture and distribution in the South of their nationally known Saniwax brand of waxed paper.

The ground was purchased several months ago and much time and thought have been expended in planning what will be one of the most modern and efficient waxed paper plants in the country. New machinery has been ordered and will be ready for installation when the building is completed in the early spring. Mr. Irvine says that Memphis, on account of its splendid shipping facilities, favorable freight rates and accessibility to all sections of the South, is an ideal location for the industry.

Charles E. Clement who has been superintendent of the Kalamazoo plant ever since its inception, has been elected vice president of the company and will be resident manager of the Memphis branch. John H. Peatling, assistant sales manager, will go to Memphis as office manager.

Urban E. Moss, who has for years been assistant superintendent of the Merchants Publishing Company will succeed Mr. Clement as superintendent of the Kalamazoo plant and expects to take up his new duties early in January. The other officials who will remain in Kalamazoo are: George L. Irvine, president; Stuart Irvine, secretary-treasurer; Frank D. Bullock, sales manager and Louis A. Warner, credit manager.

A site for the erection of a larger plant in Kalamazoo was purchased about a year ago but owing to the urgent need of serving their rapidly increasing southern trade, it was decided to postpone indefinitely building in Kalamazoo.

The quality of product turned out by each plant will be identical and the whole idea of the expansion is planned to render the best possible service to their customers. The company specializes in the manufacture of bread wrappers for the wholesale and retail baking trade and is equipped to handle any demand in that line.

Eagle Lodge Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., December 28, 1925.—George Astey has been elected president of Eagle Lodge Papermakers, with these other officers: Vice president, Albert Sabourin; recording secretary, John W. Bailey; treasurer, Michael McLain; trustees, Patrick Curran, James Miles, Anthony Lally and James Fitzgerald.

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ENGLISH WEAVE

In Two, Three, Four, Five and Six Ply, 60 inches to 176 inches in width.

BY ACTUAL TEST this felt will dry 33 per cent more paper, with ABSOLUTELY NO FELT MARKS IN THE PAPER.

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AMERICAN MADE FOR AMERICAN TRADE

Over forty years' experience in the clay industry has naturally resulted in the adoption of the most scientific mehods and practices. This record of achievement is your guaranty of **Clay** of absolute uniformity at prices consistent with M. E. quality and service.

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THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

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Woolen manufacturers since 1856

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STANDARD IN SODA SINCE 1881

Quality and service guaranteed by the Largest Source of Supply

Soda Ash

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Over 75 stock distributing points assure prompt shipment with minimum transportation charges.

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Chicago Syracuse Indianapolis Philadelphia
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Market Quotations

Quoted by Hepburn & Co., 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	OFFERED
Abitibi Power and Paper, Gen. 6s 1940	100	102
Advance Bag and Paper, 7s 1943	98	100*
Brompton Pulp and Paper, 6s 1927	94	96
Beaver Board, 8s 1933	92	94
Bedford Pulp and Paper, 6½s 1942	98	...
Berkshire Hills Paper Co., 6s 1941	...	80
Beaver Products Corp., 7½s 1942	104	106
Belgo Canadian Paper, 6s 1943	100	102
Brown Paper Co., 8s 1931	102	...
Berlin Mills, 5s 1942	98	...
Bryant Paper Co., 6s 1942	99	102*
Brown Campany, Serial, 6s 1925-43	97	100
Central Paper 6½s 1925-42	91	94
Cape Breton Pulp and Paper, 6s 1932	100	...
Carthage Sulphite Pulp and Paper, 8s 1941	40	50
Champion Coated Paper Co., 6s 1924-34	...	102
Champion Fibre Co. Notes, 8s 1930	101	...
Cherry River Paper, 5s 1929	98	100*
Donnaconna Paper Co., Ltd., 6s 1940	95	100*
Eddy Paper, 7½s 1931	100	...
Eagle Paper, 6½ 1932	96	100
Escanaba Paper, 6s 1933	87	95*
Fox River Paper, 7s 1931	100	...
Fort Orange Paper Co., 7s 1942	95	99
Gilbert Paper Co., 7s 1927	96	...
Gilbert Paper Co., 6½s 1923-29	101	102*
Hammermill Paper Co., 6s 1930-39	99	...
Hummell, Ross Fibre Corp., 7s 1925	90	...
Jessup & Moore Paper Co., 6s 1945	98½*	100
Lake Superior Pulp and Paper, 6s 1941	105	...
Mattagami Pulp and Paper, 6s 1937	90	...
Marinette & Menominee, 7½s 1936	104	...
National Paper and Type, 6s 1947	96	99*
Oswego Falls Corp., 8s 1942	102	105
Orono Pulp and Paper, 5s 1941	93	96*
Orono Pulp and Paper, 6s 1943	97	100*
Oxford Paper Co., 6s 1947	100	...
Paterson Parchment Paper, 5½s 1927-28	98	100
Paterson Parchment, 6s 1938	98	100*
Parker Young Co., 6½s 1944	92	96
Price Bros., Ltd., 6s 1943	100	...
Provincial Paper Mills, Ltd., 6s 1940	97	...
Riordon Co., Series A, 8s 1940	115	118
Riordan Paper, 6s 1924	99	101
Riordan Pulp and Paper, Ltd., 6s, 1929	33	35
River Raisin Paper, 8s 1936	104	106
St. Maurice Paper Co., Ltd., 5½s, 1929	98½	99¾
St. Regis Paper, 6½ s. 1929-35	97	102
Smith (Howard) Paper Mills, 7s 1941	96	99
Smith (Howard) Paper Mills, 6s 1934	98	...
St. Croix Paper, 5s 1923-37	95	...
Stevens & Thompson Paper, 6s 1942	85	92
Spanish River Pulp and Paper, 6s 1931	105	108
Spanish River Pulp and Paper, Gen 8s 1941	106	109
Ticonderoga Pulp and Paper ,Co. 6s 1940	91	95
Ticonderoga Pulp & Paper 1-5, 1930	88	93
S. D. Warren Company, 6s, 1945	97	100
Whittaker Paper, 1st 7s 1942	99	101
Watab Paper Co., 6½s 1942	100	104
Waterway Paper Products, 7s 1924-27	95	100
Wayagamack Pulp and Paper, Ltd., 6s 1951	88	90

STOCKS	BID	ASKED
Abitibi Power and Paper, Com.	74	76
Abitibi Power and Paper, Pfd.	103	...
Advance Bag and Paper, Com.	8	12*
Advance Bag and Paper, Pfd.	77	...
American Writing Paper Co., Com.	½	¾
American Writing Paper Co., Pfd.	1½	2
American Writing Paper Co., Certificates	¾	1
Beaver Board, Com.	4	6
Beaver Board, Pfd.	34	37
Bryant Paper, Cap.	12	...
Bryant Paper, Pfd.	9	...
Chicago Mill & Lumber Co., Com.	63	...
Chicago Mill & Lumber Co., Pfd.	98	104
Crown Williamette, Com.	93	98*
Crown Williamette, 7% A, Pfd.	98	SW
Donnaconna Paper, Com.	49	54
Donnaconna Paper, Pfd.	95	100
Great Northern Paper, Cap.	260	270
International Paper Co., Com.	63	65
International Paper Co., Pfd., 6%	85	90
International Paper, 7% Pfd.	97	100
Jessup & Moore Paper, Pfd.	85	...
Jessup & Moore Paper, Com.	30	...
Oxford Papers, Com.	102	...
Oxford Paper Co., Pfd.	100	...
Provincial Paper Co., Com.	98	...
Provincial Paper Co., Pfd.	100	...
Price Brothers, Cap.	57	60
St. Croix Paper	185	215
St. Maurice Paper Co., Cap.	100	103
St. Regis Paper Co., Cap.	54	56
Spanish River Pulp and Paper, Com.	106	109
Spanish River Pulp and Paper, Pfd.	115	119
West Virginia Pulp and Paper, Cap.	...	49
West Virginia Pulp and Paper, Cap.	...	47
West Virginia Pulp and Paper, Pfd.	95	105
Whittaker Paper, Com.	53	...
Whittaker Paper, Pfd.	95	...

* Nominal.

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine Sized	8.00	@11.00
News—		
Rolls, contract	3.25	@ 3.65
Rolls, transit	3.75	@ 4.25
Sheets	4.00	@ 4.25
Side Runs	3.25	@ 4.00
Book, Cased—		
S. & S. C.	7.00	@ 9.75
M. F.	6.25	@ 8.75
Coated and Enamel	8.00	@15.00
Lithograph	8.00	@15.00
Tissues—Per Ream—		
White No. 1	.80	@ 1.00
Anti-Tarnish	1.10	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .85
Kraft	.90	@ 1.00
Manila	.75	@ .85
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	5.50	@ 6.00
Southern	4.75	@ 5.25
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
S. Screening	3.00	@ 3.50
Card Middles	4.00	@ 5.00
Boards—per ton—		
News	45.00	@47.50
Straw	57.00	@60.00
Chip	42.00	@45.00
Binders' Boards	72.50	@77.50
Sgl. Mla. Ll. Chip.	58.00	@60.00
Wood Pulp	70.00	@75.00
Container	62.50	@67.50
Sulphate Screenings—		
Coarse	.75	@ .85
Refined	1.75	@ 2.00
Ground Wood—		
Screenings	20.00	@25.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	35.00	@40.00
Dry	38.00	@42.00
(F. o. b. Mill)		
No. 1 Domestic	28.00	@32.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	4.25	@ 4.50
Easy Bleaching	3.55	@ 3.60
No. 1 strong unbleached	3.05	@ 3.25
No. 2 strong unbleached	2.80	@ 3.05
No. 1 Kraft	3.10	@ 3.35
Sulphate—		
Bleached	3.75	@ 4.00
(F. o. b. Pulp Mill)		
Sulphite (Domestic)—		
Bleached	4.00	@ 4.75
Easy Bleaching Sulphite	3.00	@ 3.25
News Sulphite	2.90	@ 3.00
Mitscherlich	3.25	@ 3.75
Kraft (Domestic)	3.00	@ 3.50
Soda Bleached	4.00	@ 4.25

Domestic Rags

New Rags

Prices to Mill f. o. b. N. Y.

Shirt Cuttings—		
New White, No. 1.	14.50	@15.00
New White, No. 2.	8.00	@10.00
Silesias No. 1	9.75	@10.50
New Unbleached	14.00	@14.70
Washables	8.00	@ 8.25
Fancy	9.25	@ 9.75
Blue Overall	11.50	@11.75
New Blue Prints	7.25	@ 7.75
New Soft Blacks	5.75	@ 6.00
Mixed Khaki Cuttings	6.75	@ 7.25
Pink Corset Cuttings	11.25	@11.75
Pink Muslin	10.00	@10.50
New Light Seconds	3.50	@ 3.75
O. D. Khaki Cuttings	7.00	@ 7.50
Men's Corduroy	5.75	@ 6.25
New Mixed Blacks	4.00	@ 4.50

Old Rags

White, No. 1—		
Repacked	6.75	@ 7.25
Miscellaneous	6.25	@ 6.75
White, No. 2—		
Repacked	4.00	@ 4.25
Miscellaneous	3.50	@ 3.75
St. Soiled, White	2.90	@ 3.00
Thirds and Blues—		
Repacked	3.75	@ 4.00
Miscellaneous	3.00	@ 3.25
Black Stockings	3.75	@ 4.25
Roofing Rags—		
Cloth Strippings	2.10	@ 2.20
No. 1	2.10	@ 2.20
No. 2	1.80	@ 1.90
No. 3	1.50	@ 1.60
No. 4	1.60	@ 1.70
No. 5A	1.00	@ 1.15

Foreign Rags

New Light Silesias	10.00	@11.00
Light Flannelettes	10.50	@11.75
Unbleached Cottons	14.00	@14.50
New White Cuttings	14.00	@15.00
New Light Oxfords	10.00	@10.50
New Light Prints	9.00	@ 9.50
New Mixed Cuttings	4.25	@ 4.50
New Dark Cuttings	4.00	@ 4.25
No. 1 White Linens	10.00	@11.00
No. 2 White Linens	7.25	@ 8.25
No. 3 White Linens	6.25	@ 6.75
No. 4 White Linens	4.50	@ 5.50
Old Extra Light Prints	4.25	@ 4.75
Ord. Light Prints	3.25	@ 3.75
Med. Light Prints	2.50	@ 3.00
Dutch Blue Cottons	3.50	@ 4.00
Ger. Blue Cottons	2.75	@ 3.00
Ger. Blue Linens	4.00	@ 4.25
Checks and Blues	3.25	@ 3.50
Linsay Garments	2.10	@ 2.25
Dark Cottons	1.95	@ 2.05
Shoppery	2.00	@ 2.10
French Blues	3.50	@ 4.00

Bagging

Prices to Mill F. o. b. N. Y.

Gunny No. 1—		
Foreign	3.60	@ 4.00
Domestic	3.75	@ 4.00
Wool Tares, light	2.90	@ 3.10
Wool Tares, heavy	3.00	@ 3.25
Bright Bagging	2.85	@ 3.00
Mixed Bagging	2.40	@ 2.50
Sound Bagging	2.10	@ 2.20
Roofing Bagging	1.75	@ 1.80
Small Mixed Rope	2.25	@ 2.50
Manila Rope—		
Foreign	5.25	@ 5.50
Domestic	6.50	@ 6.75
New Bu. Cut	4.00	@ 4.25
Hessian Jute Threads—		
Foreign	4.50	@ 5.00
Domestic	4.25	@ 4.75

Old Waste Papers

F. o. b. New York)

Shavings—		
Hard, White, No. 1	3.65	@ 3.85
Hard, White, No. 2	3.15	@ 3.25
Soft, White, No. 1	2.95	@ 3.20
Flat Stock—		
Stitchless	1.30	@ 1.40
Overissue Mag.	1.30	@ 1.40
Solid Flat Book	1.15	@ 1.25
Crumpled No. 1	.85	@ .95
Solid Book Ledger	1.75	@ 2.00
Ledger Stock	1.50	@ 1.65
New B. B. Chips	.60	@ .70
Manilas—		
New Env. Cut	2.65	@ 2.80
New Cut No. 1	1.65	@ 2.00
Extra No. 1 old	1.20	@ 1.30
Print	.75	@ .85
Container Board	.60	@ .70
Bogus Wrapper	.75	@ .85
Old Krafts Machine compressed bales	2.40	@ 2.55
News—		
No. 1 White News	1.95	@ 2.05
Strictly Overissue	.75	@ .85
Strictly Folded	.65	@ .70
No. 1 Mixed Paper	.45	@ .50
Common Paper	.30	@ .35

Twines

(F. o. b. Mill)

Cotton—		
No. 1	.39	@ .42
No. 2	.38	@ .40
No. 3	.37	@ .39
India, No. 6 basis—		
Light	.21	@ .22
Dark	.19	@ .21
B. C., 18 basis	.39	@ .41
A. B. Italian, 18 basis	.56	@ .61

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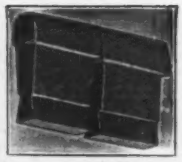

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Finished Jute—			
Dark 18 basis	.33	@	.34
Light 18 basis	.31	@	.33
Jute Wrapping, 3-6 Ply—			
No. 1.	.25	@	.27
No. 2.	.23½	@	.25½
Tube Rope—			
4-ply and larger	.19	@	.22
FINE TUBE YARN—			
4-ply and larger	.24	@	.32
4-ply	.25	@	.28
3-ply	.22	@	.25
Unfinished India—			
Basis	.19½	@	.20½

Paper Makers' Twine			
Balls	.16	@	.14
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.24	@	.44
Ameri. Hemp, 6	.30	@	.32
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.10	@	.12
Sisal Lath Yarn—			
No. 1	.14	@	.15
No. 2	.11	@	.13
Manila Rope	.20	@	.21

CHICAGO

Paper

F. o. b. Mill

All Rag Bond	.35	@	.40
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite	.09	@	.12
Sulphite Bond	.07	@	.10¾
Sulphite Ledger	.09	@	.12
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.09	@	.12
No. 1 M. F. Book	.05½	@	.07½
No. 1 S. & S. C. Book	.06	@	.07¾
Coated Book	.07½	@	.10
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¾	@	.04¾
No. 1 Manila	.04¾	@	.05¼
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¾	@	.04¾
Butchers' Manila	.04	@	.04½
No. 1 Kraft	.06	@	.06½
Southern Kraft	.04¼	@	.05
No. 2 Kraft	.05¼	@	.05¾
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue, 24x36 sheet	.07¼	@	.07¾
White Tissue, 20x30 sheet	.07¼	@	.07½

Boards, per ton—
(Delivered Central Territory)

Plain Chip	45.00	@47.50
Solid News	48.50	@50.00
Manila Line Chip	57.50	@60.00
Container Lined—		
(Delivered Central Territory)		
85 Test	—	@75.00
100 Test	—	@80.00

Old Papers

F. o. b. Chicago

Shavings—			
No. 1 Hard White	3.50	@	3.60
White Envel. Cuttings	3.40	@	3.50
No. 1 Soft Shav.	2.90	@	3.00
No. 1 Mixed	—	@	—
No. 2 Mixed	1.15	@	1.20
Ledger and Writings	1.55	@	1.60
Solid Books	1.40	@	1.50
No. 1 Light Books	1.00	@	1.05
Blanks	2.00	@	2.10
Kraft	2.50	@	2.75
New Kraft Cuts	2.70	@	2.80
Manila Envelope Cuttings	2.40	@	2.50
Ex. No. 1 Manila	2.00	@	2.10
Print Manila	.95	@	1.10
Folded News (over-issue)	.90	@	.95
Old Newspapers—			
No. 1	.80	@	.85
No. 2	.70	@	.75
Mixed Papers—			
No. 1	.65	@	.70
No. 2	.50	@	.60
Roofing Stocks, f. o. b. Chicago, Net Cash—			
No. 1	47.00	@52.00	
No. 2	45.00	@50.00	
No. 3	43.00	@48.00	
No. 4	41.00	@46.00	

BOSTON

Paper

Ledgers—			
Sulphite	.08½	@	.18
Rag content	.18	@	.36½
All Rag	.38	@	.50
Bonds—			
Sulphite	.07½	@	.10½
Rag content	.17	@	.45
All Rag	.36½	@	.51
Writings	.08	@	.20
Superfines	.22	@	.50
News	.04	@	.04½
Book, Super	.08	@	.10
Book, Coated	.09	@	.14
Coated Litho	.09½	@	.15
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.12
Manila, Sul. No. 1	.05	@	.05
Manila, Sul. No. 2	.03¾	@	.04¼
No. 1 Kraft	.05¾	@	.06½
No. 2 Kraft	.05¼	@	.05¾
Common Bogus	.02½	@	.02¾
Straw Board	—	@50.00	
News Board	—	@47.50	
Chip Board	—	@45.00	
Single Manila Pulp lined board	57.50	@60.00	
Single White, patent coated board	75.00	@82.50	
Wood Pulp Board	80.00	@85.00	
Binder Boards	75.00	@85.00	
Tarred Felts—			
Regular	61.00	@63.00	
Slaters	66.00	@68.00	
Best Tarred, 1 Ply, roll	1.50	@	1.60
Best Tarred, 2 Ply, toll	1.70	@	1.80
Best Tarred, 3 Ply, roll	2.00	@	2.10

Old Papers

Shavings—			
No. 1 Hard White	3.75	@	4.00
White Blank News	1.75	@	2.00
Manila Env. Cuttings	2.80	@	3.00
No. 2 Hard White	3.25	@	3.50
No. 1 Soft White	.02¾	@	.03
No. 2 Soft White	.02½	@	.03
No. 1 Mixed	1.60	@	1.75
No. 2 Mixed	1.25	@	1.50
Solid Ledger Stock	2.00	@	1.75
No. 1 Books, Heavy	1.25	@	—
No. 1 Books, Light	—	@	1.25
No. 1 New Manila	2.50	@	2.60
No. 1 Old Manila	1.75	@	2.00
Print Manila	1.05	@	1.20
Old Kraft	2.25	@	2.35
Overissue News	1.00	@	1.10
Old Newspapers	.70	@	.85
No. 1 Mixed Paper	.60	@	.47½
Box Board, Chip	.60	@	.50

Bagging

Price f. o. b. Boston

Gunny No. 1—			
Foreign	—	@	3.37½
Domestic	—	@	3.50
Manila rope	—	@	5.50
Mixed Rope	2.00	@	—
Scrap burlaps	—	@	2.37½
Wool Tares, heavy	2.50	@	2.75
Mixed Strings	—	@	1.90
New Burlap Cutting	—	@	3.25

Domestic Rags (New)

Price f. o. b. Boston

Shirt Cuttings—			
New White No. 1	.15½	@	.15
Silesias, No. 1	.11	@	—
New Unbleached	.14¼	@	.15
Washable	.07¾	@	.08
Fancy	.10½	@	—
Cottons—According to Grades—Blue—			
Blue overalls	.12½	@	—
New Black, soft	.07	@	—
Khaki Cuttings	.07	@	—
Corduroy	.04	@	.05
New Canvas	.12	@	.12½

Domestic Rags (Old)

Price f. o. b. Boston

White No. 1	10.00	@	—
Repacked	9.50	@	—
Miscellaneous	8.50	@	—
White No. 2—			
Repacked	6.50	@	—
Miscellaneous	5.25	@	—
Thirds and Blues—			
Repacked	5.00	@	—
Miscellaneous	3.50	@	—
Roofing Stock—			
No. 1	2.15	@	—
No. 2	1.90	@	—
No. 3	1.75	@	—
No. 4	1.90	@	—

PHILADELPHIA

Paper

Bonds	.07	@	.40
Ledgers	.11	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	—	@	.22
Fine	.20	@	.26½
Fine, No. 2	.16	@	.25
Fine, No. 3	.12	@	.20
Book, M. F.	.06¾	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.11	@	.16
Coated Lithograph	.09	@	.12
Label	.09	@	.12
News	.03¾	@	.04
No. 1 Jute Manila	.09½	@	—
Manila Sul., No. 1	.04½	@	.06
Manila No. 2	.04	@	.04½
No. 2 Kraft	.05¼	@	.05¾
No. 1 Kraft	.06¼	@	.06½
Common Bogus	.02¾	@	—
Straw Board	56.00	@55.00	
News Board	45.00	@	—
Chip Board	47.50	@	—
Wood Pulp Board	4.50	@	5.00

(Carload Lots)

Binder Boards—			
Per ton	75.00	@80.00	
Carload lots	65.00	@70.00	
Tarred Felts—			
Regular	66.00	@68.00	
Slaters	70.00	@72.00	
Best Tarred, 1-ply (per roll)	1.85	@	1.95
Best Tarred, 2-ply (per roll)	1.55	@	1.70
Best Tarred, 3-ply	2.10	@	2.15
No. 1 Mixed Paper	.65	@	.70

Domestic Rags (New)

Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1	.13½	@	.14
New White, No. 2	.06	@	.08
Silesias, No. 1	.10½	@	.11
New Unbleached	.14	@	.14½
Washable	.07¼	@	.07¾
Fancy	.09½	@	.10
Cottons—according to grades—			
Blue Overall	.11	@	.12
New Blue	.04	@	.04¼
New Black Soft	.06	@	.06¾
New Light Seconds	.03½	@	.03¾
Khaki Cuttings	.06½	@	.07
Corduroy	.04	@	.04½
New Canvas	.08¾	@	.09
New Black Mixed	.05	@	.05½

Bagging

F. o. b. Phila.

Gunny, No. 1—			
Foreign	3.00	@	3.25
Domestic	3.00	@	3.25
Manila Rope	4.75	@	6.00
Sisal Rope	2.50	@	—
Mixed Rope	1.00	@	1.25
Scrap Burlaps	2.25	@	2.50
Wool Tares, heavy	2.00	@	2.13
Mixed Strings	1.25	@	—
No. 1, New Light Burlap	3.50	@	3.75
New Burlap Cuttings	3.25	@	3.50

Old Papers

F. o. b. Phila.

Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 2 Hard White	3.00	@	3.25
No. 1 Soft White	2.60	@	2.70
No. 2 Soft White	2.00	@	2.20
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	1.00	@	1.10
Solid Ledger Stock	1.75	@	1.90
Writing Paper	1.60	@	1.65
No. 1 Books, heavy	1.30	@	1.40
No. 2 Books, light	1.20	@	1.25
No. 1 New Manila	1.80	@	2.00
No. 1 Old Manila	1.60	@	1.75
Print Manila	1.25	@	1.35
Container Manila	1.00	@	1.10
Old Kraft	2.00	@	2.10
Common Paper	.50	@	.60
Straw Board, Chip	.60	@	.65
Binders Bd., Chip	.60	@	.65
Overissue News	.85	@	1.00
Old Newspaper	.70	@	.75

Domestic Rags (Old)

White, No. 1—			
Repacked	6.75	@	7.00
Miscellaneous	6.25	@	6.50
White, No. 2—			
Repacked	.05	@	.05¼
Miscellaneous	.04¾	@	.05
Thirds and Blues—			
Repacked	3.75	@	4.00
Miscellaneous	2.75	@	3.00
Black Stockings	4.25	@	4.50
Roofing Stock—			
No. 1	2.00	@	2.15
No. 2	1.90	@	2.00
No. 3	1.25	@	1.35
No. 4	1.10	@	1.20
No. 5A	1.10	@	1.15
B	1.05	@	1.10
C	1.00	@	1.05

TORONTO

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.10½	@	.12½
Light tinted	.11	@	.13½
Dark tinted	.12½	@	.15
Ledgers (sulphite)	—	@	.13
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	—
Writing S. C.	.10	@	—
News f. o. b. Mills—			
Rolls (carloads)	3.50	@	—
Sheets (carloads)	—	@	4.25
Sheets (2 tons or over)	—	@	4.60
Book—			
No. 1 M. F. (carloads)	8.00	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.50	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and litho	14.50	@	—
No. 2 Coated and litho	13.50	@	—
No. 3 Coated and litho	12.75	@	—
Coated tinted	.15	@	—
Wrapping—			
Rag Brown	4.75	@	—
White Rag	5.25	@	—
"B" Manila	5.50	@	—
No. 1 Manila	6.50	@	—
Fiber	6.50	@	—
Kraft, M. F.	7.00	@	—
M. G.	7.15	@	—

Pulp

(F. o. b. Mill)

Ground wood	31.00	@32.00	
Sulphite easy bleaching	65.00	@67.00	
Sulphite news grade	60.00	@65.00	
Sulphite, bleached	80.00	@82.00	
Sulphate	72.50	@73.00	

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.65	@	—
Soft White Book shavings	—	@	3.15
White Blk, News	1.70	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.25	@	—
Light and Crumpled Book Stock	1.10	@	—
Ledgers and Writings	1.40	@	—
Solid Ledgers	1.40	@	—
Manila—			
New Manila Cut	—	@	1.60
Printed Manilas	1.10	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.90	@	—
Folded News	.90	@	—
No. 1 Mixed papers	.70	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

	Per lb.		
No. 1 White Shirt Cuttings	.14½	@	.14¾
No. 2 White Shirt Cuttings	.08	@	.08½
Fancy Shirt Cuttings	.09¾	@	.10
No. 1 Old Whites	—	@	—
Thirds and Blues	—	@	—